A

SECOND DISSERTATION

ON

FEVER,

CONTAINING THE

HISTORY AND METHOD OF TREATMENT

OF A

Regular Tertian Intermittent.

Medicina igitur adhuc taliter comparata eſt, ut fuerit magis oſtenta, quam elaborata: etiam magis elaborata quam amplificata.

BACON, AUG. Sc. Lib. ii. Cap. i.

Solent autem homines naturam tanquam ex præalta turri et e longo deſpicere, et circa generalia nimium occupari; quando ſi deſcendere placuerit et ad particularia accedere, reſque ipſas attentius et diligentius inſpicere, magis vera et utilis fieret comprehenſio.

IBID.

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LONDON:
PRINTED FOR J. JOHNSON, ST. PAUL'S CHURCH-YARD.

M,DCC,XCV.

ADVERTISEMENT.

IN this Diſſertation the Reader will only find thoſe appearances which are neceſſary for conſtituting a regular tertian deſcribed, and the manner of treating them pointed out; all accidents, or other diſeaſes which ſometimes take place during its progreſs, are purpoſely omitted, ſuch as hard tumours in the abdomen, dropſy, &c. An account of theſe will be given in a future Diſſertation.

A
SECOND DISSERTATION, &c.

THE history of a fever consisting of one paroxysm or simple fever has been given in the Dissertation already published. The author, in pursuance of his plan, means next to treat of that case of fever recurring by paroxysms, in which each paroxysm goes through its three stages in the space of less than twenty hours, and returns nearly at the end of forty-eight hours from the beginning of the former paroxysm; and where nothing happens excepting those appearances, which are essential to the fever. A fever of this kind is called a regular tertian.

If a person has never been before affected with an intermitting fever, and a paroxysm

of ſimple fever ſhould take place and ſhould terminate in a complete criſis, ſo that no ſymptom of the fever is left, the patient is reſtored to perfect health, and the fever does not recur, as far as has come under the author's obſervation or information. The perſon is likewiſe not more liable to be affected with fever from any new cauſe than if no ſuch paroxyſm had taken place.

When a perſon is ſeized with a paroxyſm of fever, it frequently goes through its ſtages and terminates by a criſis in ten or twelve hours, but there are left behind ſymptoms of the firſt ſtage, ſuch as languor, pain in the ſmall of the back, head-ach, ſome foulneſs of the tongue, &c. When this happens ſometimes, but rarely, theſe ſymptoms gradually diminiſh and go of, and the patient recovers his health in three or four days. It much oftener happens that when ſymptoms of the firſt ſtage remain after the criſis, at leaſt nine times out of ten, that after a certain length of time a new paroxyſm of fever takes place, and often at the end of forty-eight hours, and the diſeaſe becomes a regular tertian.

When a perſon is expoſed to putrid or infectious vapour, headach, languor, and reſtleſſneſs, or other ſymptoms of the firſt ſtage of fever often take place, but not to that degree as to occaſion a hot fit, or ſecond ſtage. Theſe ſometimes gradually wear off, and no fever ariſes, but they alſo very often increaſe all at once, and a complete paroxyſm takes place ſeveral days after the firſt appearance of theſe ſymptoms. From theſe obſervations it is very probable that one cauſe of the return of the ſecond paroxyſm of an intermittent is, that the criſis of the firſt was imperfect.

If a regular tertian has gone through many paroxyſms, and in any one paroxyſm the criſis is quite complete, it ſometimes happens that the diſeaſe does not recur, but the paroxyſm returns much more frequently, although there are none of the ſymptoms of the firſt ſtage left, or of any part of the fever.

If a perſon has formerly been afflicted with a tertian fever, although he has continued

tinued in health for a year, yet if a fever ſhould take place, go through its ſtages in twelve hours, and no appearance of it continue, but the patient feels himſelf in perfect health, a new paroxyſm of fever ſhall often take place at the end of forty-eight hours from the beginning of the firſt paroxyſm. In this caſe the cauſe of the return is probably a habit acquired, as we ſee circumſtances often recur, becauſe they recurred before. A man, for inſtance, has been accuſtomed to dine at a certain hour, his appetite returns at that hour, if he eats nothing the appetite neverthelefs goes off.

When a paroxyſm of fever goes off, leaving ſome ſymptoms of the firſt ſtage after the criſis, it oftener returns at the beginning of the forty-ninth hour from the beginning of the former paroxyſm than at any other period.

Much conjecture has been made on the reaſon why a paroxyſm of fever ſhould ariſe at the end of the forty-eighth, or beginning of the forty-ninth hour. No revolution of the heavenly bodies accords with

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this period, nor any operation in the body itſelf. We are left here therefore, as in moſt other caſes of fever, mere obſervers, without a means of accounting a priori for its appearances.

In ſome caſes a paroxyſm returns, and freſh paroxyſms continue returning at the beginning of the forty-ninth hour exactly, ſo as to form a tertian perfectly regular. Paroxyſm of fever, it has been obſerved in the former Diſſertation, commence much more frequently from eight o'clock in the morning to eight in the evening, than from the evening to the morning. The paroxyſms of a regular tertian follow one another at the time of the day of the coming on of the firſt paroxyſm, ſo that they continue recurring at the time of the day when the firſt paroxyſm took place. Some have ſuppoſed that the ſun's paſſage over the meridian was connected with this return; but the ſun's paſſage is by no means conſtantly at the ſame hour, as it varies from mean time from a quarter of an hour earlier to a quarter of an hour later, and this difference has never been ob-

ſerved to occaſion the leaſt alteration in the returns of a regular tertian. The paroxyſms do not take place more frequently at noon than at any other time, between eight in the morning and ſix in the evening. One that takes place at ten in the morning or three in the afternoon, cannot be connected with the ſun's paſſage over the meridian. The ſun paſſes it once in twenty-four hours, a regular tertian recurs but once in forty-eight. Should a perſon afflicted with a tertian travel eaſt or weſt, the ſun's paſſage will be accelerated or retarded, but the paroxyſm will return exactly at its uſual period. It is evident therefore that the ſun cannot have any effect in re-producing the paroxyſms of a regular tertian. Neither can the phaſes of the moon, or other planetary bodies, ſince their variations are infinitely greater.

Although intermitting fevers return more frequently at the end of forty-eight hours, than at any other period, ſo as to form regular tertians, yet they are not uniformly ſo exact, having often a latitude of two

hours,

hours, ſooner or later; that is, from forty-ſix to fifty hours.

Twenty fevers at leaſt return at a period between forty-ſix and fifty hours, for one which recurs in a period from thirty-ſix to forty; or at any other period, excepting at the end of twenty-four or ſeventy-two hours.

When a paroxyſm of fever does not return exactly at the end of forty-eight hours, it often happens that one paroxyſm recurs at the end of forty-nine, the other at the end perhaps of forty-ſeven hours, thus continuing to fluctuate backwards and forwards about the forty-eighth hour, never going two hours from it. For example, the firſt paroxyſm may take place at ten o'clock on Monday morning, the ſecond at eleven on Wedneſday, the third, perhaps, at half-paſt eight on Friday, the fourth at ten on Sunday, and ſo may take place between eight and twelve in the morning during the continuance of the diſeaſe. Theſe fevers have all been conſidered by thoſe who have treated on

the ſubject, as taking place at the ſame period.

It ſometimes happens that a fever continues to return at the end of forty-ſix or or of fifty hours; the former has been called an anticipating tertian; thoſe fevers whoſe period is fifty hours, retarding tertians; or thoſe generally which return at any time between forty-ſix and forty-eight hours have been called anticipating; thoſe which return from forty-eight to fifty hours retarding tertians.

An anticipating tertian ſhows in one circumſtance the ſtrong indiſpoſition of a fever to take place between eight at night and ſix in the morning. If an anticipating tertian ſhould have its firſt paroxyſm at two in the afternoon, its ſecond at noon, its third at ten in the morning, its fourth at eight, its fifth will ſometimes take place at ſix in the morning, ſometimes at eight or ten of the evening preceding. A retarding fever is ſimilar in its recurrence; if its firſt paroxyſm ſhould happen at ten in the morning,

morning, the ſucceeding ones at twelve, two, four, ſix, eight; the following one often does not take place in the night, but at ſix or eight the next morning. It is not meant to ſay that the paroxyſms never return regularly in the night, but that they recur much more rarely in the night than in the day; perhaps in a proportion of ten for one. It is entirely unknown what this depends upon, indeed the obſervation has been little attended to by any author who has not frequently ſeen the diſeaſe.

The paroxyſm in a regular tertian is exactly ſimilar to the paroxyſm of a ſimple fever, the only difference being that in a tertian the criſes of the firſt paroxyſms are not ſo compleat as to carry off every appearance of the firſt ſtage.

The ſymptoms of the firſt ſtage that remain after the criſis are various in different caſes; ſometimes the only appearances of it are languor and pain of the ſmall of the back, ſo that the practitioner, even if accuſtomed to the diſeaſe, hardly knows whether the paroxyſm will return or not.

Although

Although the tongue has become perfectly clean, the pulſe returned to its natural ſtate, and the patient is apparently in perfect health, excepting for the languor and pain in the ſmall of the back, the diſeaſe almoſt always returns. This languor muſt not be confounded with the fatigue ariſing from the paroxyſm of a ſimple fever which goes off. In a ſimple fever the patient falls aſleep either during the criſis, or immediately after it has gone off, ſleeps for two, three, or five hours, if it ſhould not happen to be the natural time of his reſt, or during the night if it ſhould, and wakes refreſhed and in perfect health; or if he ſhould not ſleep the fatigue of the paroxyſm goes off in ſix or eight hours. But if after this ſleep or time of reſt, languor and pain in the ſmall of the back continues, the diſeaſe almoſt certainly recurs.

Sometimes remains of the firſt paroxyſm are much more conſiderable; the depreſſion of ſtrength is greater; there is perhaps no pain in the ſmall of the back, but there is often pain in the forehead; the tongue continues covered with a cruſt, perhaps not univerſally, there

there being only a little towards the middle or back part of it; the pulſe is not uncommonly left with a degree of frequency beyond the natural ſtate; the ſkin, after the ſweating is over, feels dry and uneaſy. Sometimes other ſymptoms of the firſt ſtage remain, even when there is a regular criſis. There are all the varieties in the beginning of the diſeaſe between the criſis, being not compleated before the next paroxyſm takes place, and there being only ſome degree of languor and pain in the ſmall of the back.

When there is a regular tertian, in which ſeveral ſymptoms of the firſt ſtage remain, after the criſis at the beginning of the diſeaſe; as it goes on, the intermiſſions become gradually more and more perfect; or rather the criſis becomes more and more perfect. This happens, with conſiderable variety. When in the firſt criſis of the diſeaſe there is only languor left and a pain in the ſmall of the back, frequently the next criſis is by no means ſo perfect, but head-ach, foulneſs of the tongue, and frequency of the pulſe remain after it; even the next criſis

crisis may be still more imperfect, after that the crises become again gradually more complete.

It happens not uncommonly, that there is no crisis takes place after the first attack of the fever, but a second attack takes place before the first paroxysm is much diminished, so that the disease at first puts on the appearance of a continued fever. In this case, the subsequent attacks are often in the fore part of the day, or if they should come on at the time of the ordinary returns of a continued fever, which are in the evening, they observe the tertian type; in either of which cases, we may expect in a tertian period or two, first an imperfect crisis, followed gradually with more perfect ones, till all the crises are at last complete. When the crises are very imperfect at first, they almost always grow gradually more perfect, until it often happens, that they become so perfect, as not to leave behind the least vestige of the disease. That is, during the interval of the paroxysms, the appetite returns with the vigour it would have done in health,

digestion

digeſtion goes on, ſleep takes place at the uſual period and with the wonted degree of refreſhment, the head is clear, and the patient is as capable of managing his affairs as when in his beſt ſtate, is as capable of bodily exerciſe; and if he commits any irregularity, ſuch as drinking too large a quantity of wine, or eating food of too difficult digeſtion, provided the effects are gone off before the next paroxyſm takes place they produce no greater derangement than they would in perfect health. This happens only when the tertian is completely regular. Many practitioners have been in ſituations where they may never have ſeen a perfectly regular tertian, while others may have ſeen many hundreds.

Theſe perfect intermiſſions continue ſome length of time. Perhaps the intermiſſions may become quite perfect at the end of three weeks, and continue ſo for about ſix weeks, or two months. If they are perfect, and if the patient be managed properly, no debility in the ſyſtem will take place.*

* It is wiſhed to keep this Diſſertation ſtrictly to the regular diſeaſe, as treatiſes upon it have been generally confuſed by the introduction of anomalous appearances.

After this period the intermiſſions become again more imperfect. That is, the ſweating in the criſis is not ſo profuſe, there is not much lateritious ſediment in the urine, the bowels do not return ſo much to their natural ſtate; a degree of languor, want of appetite, and imperfect ſleep take place. But on the other hand, the attack is much leſs ſevere; that is, if on the former paroxyſms there was languor and feel of coldneſs, head-ach, or delirium, theſe ſymptoms are diminiſhed: if nauſea and vomiting, the vomiting ceaſes and there is but little nauſea. The patient is by no means ſo much fatigued after the paroxyſm is gone off, and thus the diſeaſe gradually abates for the ſpace of two, three, or from that to ſix weeks, at laſt leaving the patient entirely, but for moſt part weakened. He has leſs power of exerting the faculties of his mind, and of going through bodily exerciſe, is ſubject to flatulency, incapable of digeſting perfectly his food. Theſe conſequences go off after ſome time, and he often becomes more vigorous even than before the diſeaſe took place. The whole therefore of the

the diseafe occupies about four months naturally.

During this progrefs of a very regular tertian, it sometimes happens, although rarely, that at any time of the diseafe, the patient is feized with a much more violent paroxyfm; he is attacked with a confiderably greater degree of cold, more violent head-ach, greater foulnefs of the tongue, drynefs, and parchednefs of the fkin, ficknefs and delirium. This is followed by more profufe fweating, all the other critical fymptoms take place more perfectly, and no future paroxyfm arifes. This occurs much more rarely in a regular tertian than when there are irregular appearances.

It has been often obferved, that regular tertians clear the conftitution of all other difeafes, and certainly on a good foundation. If a perfon, for inftance, from twenty-five to forty years of age, fhould be afflicted with rheumatifm, which is become habitual,

tual, and a regular tertian ſhould take place, after it has gone through its courſe the rheumatiſm no longer recurs on the ſame expoſure to cold or moiſture, as it would have done if no ſuch diſeaſe had taken place.

If a perſon has been ſubject to indigeſtion, flatulency, or diſpoſition to acidity in the ſtomach and inteſtines, after the tertian has gone through its natural progreſs, theſe appearances in the inteſtinal canal no longer take place. Sometimes, habitual inflammation, or cutaneous eruptions, leave the patient during the courſe of a regular tertian, and do not afterwards return, although this more rarely happens than in other habitual diſeaſes. So epilepſy, hyſteric affection, and all other diſeaſes which have become habitual, are in many inſtances removed. In many of theſe caſes, however, no alteration is made by a tertian, and it likewiſe happens, that ſuch diſeaſes are alleviated, although not entirely carried off.

It muſt be remembered, that we are acquainted with every thing relative to matter, except-

only by experiment, whether animate or inanimate. Yet Hippocrates, his great commentator Galen, Sydenham, and many others, have asserted that the powers of the heavenly bodies on disease were considerable in regulating its progress and termination, without any proof from experiment or observation. Many have said, that diseases originated from variation in the properties of the blood, or other fluids; this assertion depended so little upon experiment, that Hippocrates, Galen, and Sydenham, with other great practitioners, did not even know that the blood consists of red particles, coagulable lymph, and serum; much less had they examined the variations that take place in it, or the other fluids in an healthy state, during disease, or after its termination. Whatever they have said on this subject is of no authority, more than the terra australis incognita, or any other dream. It is found on the contrary by experiment, that the blood of a man afflicted with a regular tertian, seldom differs from that of a man in the most perfect health. This the author has frequently

afcertained by minute examination.* Neither is there any difference in the appearance of any of the folids or fluids of the body, during or after the difeafe, excepting that the tongue, during the paroxyfm of a tertian, is covered with the cruft defcribed in the former differtation; and a latericious fediment takes place in the urine, in the crifis, which confifts of matter found in the urine of a man in health. After a tertian has gone through its regular courfe, no difference in the blood has been found upon the inveftigation of its properties, or any of the other fluids, from thofe found in a ftate of perfect health.

The Author has therefore never feen nor can himfelf conceive any caufe why a fimple paroxyfm of fever fhould go through its three ftages, and terminate in health, much lefs why a regular tertian fhould begin, grow gradually more perfect, continue for fome time in vigour, then gradually decay and go off; nor after fo many conjectures which

* The properties of this fluid are related as found by experiment in the Author's Elements of the Practice of Phyfic.

have

have been thrown away on this ſubject, does he expect that the cauſe of this will be known in his time.

The animal and vegetable creations are deſtined to be continued by ſucceſſion, not by the permanence of individuals. In man, this law is more perfect than in any other animated being; he grows up from infancy, ſo as to acquire perfection by degrees, both in his corporal and mental faculties. Theſe continue ſome years in their greateſt perfection, and then neceſſarily fall into decay, which decay is often rendered premature by diſeaſe. It would ſeem that acts of violence ſometimes will reſtore its vigour. Fever thus, and even other violent diſeaſes, which go on in a ſimilar manner, proceeding through their natural courſe, often leave the patient free, not only from the diſeaſe itſelf, but alſo from the decay ariſen from ſome leſs violent diſorder, that had not in itſelf a natural progreſs and termination in health. Probably, the manner in which this happens will ever remain inexplicable.

Regular tertians, whoſe paroxyſms are terminated in leſs than twelve hours, returning from forty-ſix to fifty hours, are very rarely fatal in temperate or cold climates. When they deſtroy, it is by a violent attack of the cold fit, which does not happen once in a thouſand caſes; or by weakening the patient.

Many practitioners conſidering how rarely regular tertians are fatal in temperate or cold climates, and that when they have gone through their natural courſe, patients are left in more perfect health than before their commencement, have thought it better not to riſk the application of any remedy which may have a tendency to cure it, leaſt the diſeaſe ſhould be diſturbed and its ſalutary effects be prevented. There have accordingly been two opinions reſpecting the treatment of this malady; one, that it ſhould be allowed to go through its natural courſe; the other, that remedies ſhould be employed to ſhorten and carry off the diſeaſe.

It is meant, first, to enquire into the practice to be pursued where medicines having a tendency to check the natural period of the disease, are not applied; and afterwards, to examine into the effects of those remedies which have been employed to put a stop to, or shorten the period of the disease.

If the practitioner be of opinion that a regular tertian should go through its natural course, his only object must be to avoid during that course every circumstance that can disturb its progress.

With this view enquiry must be made, of what, in the ordinary mode of living, or peculiarities of the climate, or what accidents may disturb the natural course of the disease.

The attention is first drawn towards the employment of proper food, and at proper times, both as it is generally known, that a certain quantity of food excites disorder in a man in health, especially of particular kinds; and as practitioners find the system extremely disordered by exhibiting food in

certain quantities, or of certain qualities during fever.

Were a tertian to confiſt of two paroxyſms only, it might not be neceſſary to employ any food whatever; but as the diſeaſe continues many weeks, ſometimes to the end of the fourth month, it is abſolutely neceſſary, that nouriſhment ſhould be given. For although total abſtinence has been practiſed by the Jews for ſix days, both from food and drink, and although men have ſometimes exiſted twenty days upon water alone, yet in both caſes they have been ſo exceſſively reduced, as to ſhew that forbearance from proper nouriſhment can never be hazarded for any length of time.

Two things muſt be attended to in the application of food in a regular tertian: Firſt, the times of the periods of a regular paroxyſm, and intermiſſion, in which it ſhould be uſed. Secondly, the qualities of the ſubſtances employed.

It muſt occur to every practitioner, that the digeſtion of the food and the paroxyſms of

of fever ſhould be entirely gone through at different times, ſo that the one may not interrupt the other; for it is known from experience, that digeſtion of the food does not take place ſo well during the paroxyſm of fever, as when no paroxyſm is preſent; and that the paroxyſm is itſelf diſturbed by the digeſtion, prolonged by it, and the criſis rendered more imperfect; it is therefore obvious that the digeſtion of the food ſhould be kept as diſtinct as poſſible from the paroxyſm of fever.

In the Treatiſe on Digeſtion by the Author, it has been ſhewn, that it is natural to man to make only one meal in the day, i. e. twenty-four hours, the additional ones are merely the effect of luxury. The time of the principal meal, has been fixed by the habit of various countries and different ages, to almoſt every part of the day; ſometimes even in the night, and that without any great inconvenience. In a tertian of forty-eight hours, there ought to be two of theſe meals. But as a tertian takes place moſt frequently between eight in the morning and ſix in the

evening, and as the digeſtion of food requires eight hours, the paroxyſm muſt interfere on the day in which it takes place, with the accuſtomed time of the principal meal: for ſuppoſing the paroxyſm to take place at eight in the morning, it will be at leaſt eight in the evening before it is completely terminated, and ſuppoſing the ordinary time of the principal meal eleven in the morning, it would be ſeven in the evening before the digeſtion of the food was perfected. If the patient ſhould continue his ordinary habits, there would therefore be only time for one meal in forty-eight hours.

The time to which the patient has been accuſtomed to eat his principal meal, is the moſt eligible. At that hour the patient grows hungry by habit, and if it ſhould be paſſed over without eating, his appetite is loſt, and in conſequence the digeſtion does not take place ſo perfectly. This happens more particularly, when it has been uſual to obſerve the time ſtrictly, ſo that in ſome perſons, nauſea, and many diſagreeable appearances ariſe, both from omiſſion of food at the

the ufual time, and from the exhibition of it at any other hour. In fuch cafes, therefore, it is a queftion whether it fhould be administered in confiderable quantity, only on the intermediate day between the paroxyfms, or whether the hour fhould be altered.

When the patient has not been ftrictly tied down by habit to one particular hour it is better perhaps to alter the time, and give two principal meals, one fo as to be eight hours before the paroxyfm begins, the other about fixteen hours after the paroxyfm has gone off. But when the time of the principal meal has been nearly defined by habit, as is generally the cafe, there fhould be only one principal meal in forty-eight hours, at the ufual time of the intermediate day; and fmaller quantities of food fhould be employed during the twenty-four hours, in which the paroxyfm takes place, counting from midnight; not however, nearer to the paroxyfm than fix hours before it comes on, nor folid food fooner than fix hours after it has entirely ceafed.

The quality of the food to be uſed is to be conſidered with relation to the different ſtates of the diſeaſe.

When at the beginning of a regular tertian, there are only remiſſions, or very imperfect intermiſſions, the tongue being covered with a cruſt, frequency of the pulſe, head-ach, and other ſymptoms of the firſt ſtage remaining after the paroxyſm, and during the whole intermiſſion; the food employed ſhould be ſuch as will produce no diſturbance in the ſyſtem during its digeſtion. If the patient be moderately ſtrong, which generally is the caſe, very little nouriſhment is required. In this caſe too, no principal meal ſhould be given.

Farinaceous matter is the food beſt adapted to the organs of digeſtion of the human body. When ſeparated from the other juices of vegetables with which it is united, it is called ſtarch, and in this ſtate becomes leſs proper for food, as it loſes the diſpoſition to enter into the fermentations in the ſtomach neceſſary for its converſion into

chyle. If it be combined with water without coagulation, it forms a viſcid and adheſive ſolution, difficult of digeſtion; but if coagulated and diſſolved in water, by boiling, the ſolution is much leſs adheſive. When naturally mixed with the juices of vegetables, it enters readily into the ſaccharine, vinous, and acetous fermentations; but in this caſe great difference ariſes from the juices with which it is combined; when found in the roots of plants, ſuch as potatoes, yams, &c. it is more apt to fall into fermentation; is therefore more flatulent and aſceſcent; qualities that render it improper for the ſtate of a tertian at preſent treated of. It is leſs diſpoſed to enter into theſe fermentations, as it is found in the ſeeds of the gramina, and is better adapted to this ſtate of the diſeaſe.

Of the ſeeds of the gramina rice contains in an equal bulk a greater quantity of farinaceous matter than any other of the ſeeds of the gramina. Before it is employed the huſk is entirely taken away, which ſhould always be the caſe with the other farinaceous ſeeds when given in fever. It is believed that ſome aſtringent matter is contained

contained in the ſeed itſelf, and certainly it is of leſs eaſy digeſtion than others of the grains which have not the farinaceous matter ſo firmly compacted. Wheat is abundant in farinaceous matter in the next degree; and millet differs very little from it; rye and barley are rather more prone to fall into the vinous and acetous fermentations; oats and mais contain the farinaceous matter leſs pure, and have been ſuppoſed to ſtimulate the ſyſtem during their digeſtion. Theſe are the ſeeds of the gramina uſually employed in Europe, they all appear proper food in this ſtate of an intermittent, and better adapted to it than any other ſpecies of nouriſhment.

Coagulation of theſe ſeeds is indiſpenſably neceſſary before they are uſed. It has been done by applying heat to them, alum, alkohol, or ſome other coagulating ſubſtance. In this ſtate of fever, coagulation by heat is alone proper. Heat may be applied ſo as to coagulate theſe ſeeds by breaking them down into groſs powder, and expoſing them to an heat of 212°. Another mode is, by boiling them a quarter of an hour in water,

throwing the water away as containing parts that might have been diſſolved before coagulation, as well as extraneous matter accidentally mixed with it. They may afterwards be diſſolved by boiling in water, or uſed whole.

Another mode has been to form them into thin cakes with water, and expoſe them to a heat ſomewhat more than 112°; but this is to be rejected, as it forms them into too compact a maſs, which cannot be eaſily penetrated by the juices of the ſtomach.

The gas produced during the fermentation of bread, and expanded by the heat of bakeing, leaves the whole maſs very porous, and therefore eaſily capable of abſorbing the watery juices of the ſtomach; it alſo increaſes the coagulating power of heat. As large maſſes of a mixture of farinaceous matter and water fermenting are often expoſed to a much greater heat than 212°, the interior parts are not ſufficiently coagulated, while the outer are beginning to be decompoſed or burn. For this reaſon ſuch maſſes are often cut into ſlices and baked a ſecond time, in order

order to perfect the coagulation. This preparation was called by the antients, panis biſcocta.

In a temperate or cold country, when the patient is ſtrong, and there are only ſlight remiſſions at the beginning of an intermittent, or it puts on the appearance of a continued fever, excepting that the exacerbations do not take place in the evening, it is not neceſſary to give great nouriſhment, yet ſome is abſolutely neceſſary. The Greek phyſicians appear plainly not to have allowed any food or drink whatever on the firſt days. This ſeems improper, for if no watery fluid were exhibited, the proportion of fluids in the body would probably be too much diminiſhed by the vapour which flies off from the lungs and other external ſurfaces of the body, and by the neceſſary evacuations. Accumulation of ſea ſalt could not take place if neither food nor drink were thrown into the body; but common ſal ammoniac and phoſphoric ammoniac are continually forming by proceſſes which ſeem rather to decompoſe than to produce blood or the other fluids, and

would be accumulated. Yet theſe might not be detrimental, as water might be formed by the ſame decompoſition, ſo as to render their ſolutions equally delute.

Neither the ſolids nor fluids of a living body are ſubject to putrefaction; yet ſome portion of the fluids or ſolids, or both, ſeem to verge ſo near putrefaction, as to be converted into mucilaginous matters which are conſtantly waſhed off by the watery ſecretions. Were the quantity of water diminiſhed, they might not be carried off, but go ſtill farther on to putrefaction, producing ſalts and vapours which might be pernicious. On this account it may be neceſſary to throw watery fluids in this caſe of the diſeaſe into the blood veſſels.

When the remiſſions and intermiſſions of fever are very imperfect, or when the diſeaſe at the beginning puts on the appearance of a continued fever, only that the exacerbations do not take place in the evening, perhaps it is not neceſſary that much chyle ſhould be formed, becauſe when the intermiſſions become more perfect, there will be time

time for food of greater nouriſhment to be digeſted, without interfering with the paroxyſms of the diſeaſe; nouriſhment might therefore be out of the queſtion at this time of the diſeaſe.

One ſymptom which takes place in this caſe of fever, is great thirſt: a natural diſpoſition therefore to throw a quantity of watery fluid into the ſtomach. It ſeems to have been an idea of many phyſicians that every natural appetite ſhould be reſiſted, but in diſeaſe it is certain, that the natural appetites are often the beſt guides. It is true there are ſome exceptions to this, as in the caſe of difficulty of breathing from inflamation of the lungs, when the patient wiſhes to be expoſed to a blaſt of air, which in a cold country is certainly noxious, although a free air might be proper in a warm country. The loathing of all kinds of animal food at the beginning of an intermittent, when the intermiſſions are very imperfect, points out that ſuch food ſhould not be exhibited; and the deſire for drink indicates that it is proper. It was ſaid indeed by a Greek phyſician, that thirſt

would ſooner go off if none were employed: Upon trial this is not found to be the caſe; if no drink is uſed, the patient is uneaſy, much more reſtleſs, and the intermiſſions are longer in becoming perfect. It ſeems indeed that this was the opinion of but a few, the practice was by no means extenſive among the antients, and has hardly ever been adopted by modern practitioners. It may therefore be concluded that ſome watery fluid ſhould be exhibited.

If the diſeaſe does not intermit at firſt, but is known nevertheleſs to be the beginning of an intermittent, it is not neceſſary that the patient ſhould have any thing exhibited that will form chyle or blood, becauſe there will ſoon come a time in which nouriſhment can be exhibited without the diſturbances ariſing from the proceſs of chylification interfering with the paroxyſm of fever. In this caſe therefore water alone might be thought ſufficient, if the matter were taken *a priori*. When water alone is drank the thirſt is not found to be much diminiſhed, perhaps it is abſorbed more quickly, certainly it paſſes off by evaporation from the ſkin and

the ſurface of the lungs, and by the kidnies nearly as pure as when it was thrown into the body, and leaves the patient almoſt in the ſame circumſtances as if he had not drank it, in reſpect to his feeling. If a little farinaceous matter after it is coagulated be diſſolved in water, and given for drink, the ſame ſudden evacuation of the water actually does not take place. The farinaceous matter ſeems, while undergoing the firſt proceſs of chylification, to arreſt the water in the ſtomach, and apparently too in the blood veſſels, ſo as to prevent its being thrown out by the ſecretory glands, as it is certain that when ſuch a ſolution is drank, the ſecretions from the ſkin, or by the kidnies, are neither ſo copious nor ſo watery, and thirſt is better allayed than when water alone is drank. The ſolution generally uſed is of barley, which may be rendered more palatable by the addition of a ſmall quantity of the juice of ſome acid fruit. The ſeeds of any other of the gramina may be employed with equal advantage.

If a patient of a moderate degree of ſtrength between the ages of ten or twelve, to forty-five or fifty, ſhould be ſeized with

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an intermittent, and the intermiſſion ſhould not be perfect, he ſhould be kept the firſt three or four days on this kind of food only.

Where intermiſſions or remiſſions at the beginning are more perfect, farinaceous matter coagulated and boiled until nearly, but not entirely diſſolved, may be uſed. And where remiſſions continue very imperfect beyond the third or fourth day, food of this kind becomes neceſſary. It appears from Galen, that the Greek phyſicians were extremely careful with regard to the degree farinaceous ſeeds ought to be boiled. But much depends on the ſtate of the ſtomach of the patient; ſtrong digeſtive powers would throw out ſoon from the ſtomach through the pilorus, a ſolution which a leſs vigorous ſtomach could not bear, or could hardly digeſt.

Sago, a preparation of farinaceous matter, contained in the pith of a palm tree, may be conſidered as next in point of facility of digeſtion, and may be given where a greater degree of nouriſhment is wiſhed than is found in barley-water.

 Panada,

Panada, bread boiled down in water, is alſo a nouriſhing food of very eaſy digeſtion.

Any of the farinaceous ſeeds of the gramina; barley, for inſtance, may be boiled firſt in a little water, that thrown away and freſh water being added, may be boiled until it is almoſt entirely diſſolved; or it may be boiled until it is ſoftened, and mixed with raiſins, or other ſuch dryed fruits towards the end of the boiling. Such fruits as are not apt to become flatulent or acceſſant, ſuch as grapes, figs, peaches, apricots, oranges, or baked fruits, as apples, &c. may be uſed at the beginning, when there are criſes, but imperfect ones. No food of more difficult digeſtion ſhould be employed until the criſes, and conſequently the intermiſſions, ſhall have become tolerably perfect. When they are but perfect in a certain degree, that is when there is ſtill langour, ſome head-ach, &c. after the criſis, milk and animal broths may be added to theſe. When the criſes are quite perfect, ſolid animal food may and ought to be employed on the intermediate day, at the time of the principal meal. On the

the day on which the paroxyſm takes place, foods of eaſier digeſtion as above enumerated; but nothing ſolid ſhould be thrown into the ſtomach for ſix hours before the paroxyſm, nor till the criſis is completed.

Lamb and veal have this advantage over other meats from quadrupeds, that the flavour depending on the eſſential oil of the animal is not ſo ſtrong, and provided they are fat they may be employed advantageouſly.

Many practitioners have objected to the uſe of expreſſed oil as food in all caſes; but it appears to have ariſen merely from the ſuperſtition of denying what is grateful to the palate. Expreſſed oil, when uſed alone, produces a ſenſe of weight in the ſtomach, a degree of ſickneſs, and that particular ſenſation called cloying, none of which occur when it is mixed with farinaceous or mucilaginous matter. It takes off the adheſiveneſs of theſe, as alſo of the ſolids of young animals, and fat is leſs prejudicial in them than in older animals, when it has acquired a ſtrong flavour.

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The elder animals of the ſame ſpecies are better in broths, taking care to let them cool, ſo that the expreſſed oils, which contain the eſſential or flavoured oils, may be carefully taken off and rejected. Their broths are leſs adheſive and glary than thoſe from young animals.

Rabbits are alſo proper, but their muſcular fibres not being interſperſed with expreſſed oil are adheſive when young, ſuch as are of a year old at leaſt ought to be choſen. From theſe examples it may eaſily be judged what other kinds of animal food from quadrupeds are proper.

Such fiſhes are eligible whoſe flavour is not conſiderable, generally ſuch as are of a white colour; ſuch as are not adheſive but of a certain degree of firmneſs; whitings for example, haddocks, flounders, turbot. Thoſe which give a gelatinous ſolution, as plaice, ſhould be rejected; and others, as ſoals, which from their firmneſs are of difficult digeſtion, and moſt of all, highly flavoured fiſhes.

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Shell-fiſh of all ſorts are of very difficult digeſtion, and ought even to be rejected where the intermiſſions in fever are very perfect.

Milk, where it is not coagulated too firmly by the ſtrongly coagulating juice of the ſtomach of adults is proper, but ought never to be coagulated before it is thrown into the ſtomach. All other animal food ſhould be coagulated by heat.

Birds, as ſeveral ſpecies of the gallinæ and paſſares of Linæus, ſuch as common fowls, pheaſant, peacock, guinea-hen, partridge, quail, common ſparrow, &c. may be uſed.

The empyreuma acquired by roaſting or baking of meat renders it difficult of digeſtion, it ſhould therefore ſeldom be employed in this way, but it ſhould be perfectly coagulated by boiling, &c. which is more particularly neceſſary in the older and high flavoured animals.

Frying is an extremely improper mode of coagulating food, the original flavour being

entirely retained, and a confiderable degree of empyreuma acquired. This mode ought never to be employed.

Broiling, if the food is not high flavoured, is often very proper, when the food to be broiled is thin.

A variety of different fubftances for food have been enumerated, and even thofe only as examples, that the practitioner may not only be able to adapt the food to the powers of the ftomach, but that he may be likewife able to allow a greater variety of food when the patient requires much nourifhment; i. e. when the intermiffions are become perfect, and the difeafe going on through its natural courfe. Attention to the food is of much confequence, where the practitioner wifhes to prevent the difeafe going through its natural courfe.

It often happens, almoft always, that the ufual time of one principal meal will take place once during the intermiffion of a regular tertian, fo that there fhall be at leaft twelve hours before the next return of the difeafe. When it arrives the patient fhould

eat a moderate meal of ſuch food as has been recommended according to his appetite and powers of digeſtion. He ought not to reſtrain himſelf, as the body would become too weak for want of ſufficient nouriſhment, ſhould the fever go through its natural courſe. On the contrary, he ſhould not be enticed to eat too large a quantity by entreaty, rich ſauces, ſpices, or high flavoured food.

It ſeldom happens that the hour of the principal meal recurs twice after the fever is entirely gone off, and ſo that the ſecond ſhall be ten hours before the commencement of the next paroxyſm; but where it does it is better to refrain from eating ſo much at each of the principal meals, as the appetite might ſeem to require, as in this caſe the nouriſhment will be ſufficient from two very moderate meals.

When the time of one of the principal meals interferes with the paroxyſm; either the uſual hour may be adhered to, giving only vegetables, even although the patient had

been accuſtomed to much animal food when in health; or otherwiſe it may be altered. This depends partly on the degree of habit, of regularity the patient has acquired. Where it is great, and the time does not happen within ſix hours of the paroxyſm, it is better to employ a light repaſt, and of vegetables only, becauſe where habit of regularity is ſtrong, if the time be paſſed for an hour only without eating the appetite is loſt, and great diſturbance are produced in the ſyſtem, and that for a very long time, ſo that it would tend to render the next paroxyſm irregular, perhaps the whole of the diſeaſe.

Where a patient has been accuſtomed to make his principal meal at various times, digeſtion will go on perfectly, if the time be changed three or four hours, ſo as not to interfere with the diſeaſe; therefore in this caſe it is better to anticipate that principal meal, which would naturally take place, to ſix hours before the paroxyſm.

That food of great nouriſhment ſhould be allowed at the time of the principal meal is contrary

contrary to the opinion of many practitioners of eminence, and would be improper in a diſeaſe of ſhorter continuance than three or four weeks. It is at preſent ſuppoſed that the tertian is to be ſuffered to go through its natural courſe, and in four months ſtrength would be entirely exhauſted, were a ſmall proportion of food only to be uſed, and that of the leaſt nutritive kind.

The other meals, ſuch as breakfaſt and ſupper in this country, breakfaſt and dinner among the Romans, ſhould be kept totally clear of the paroxyſms, and ſhould conſiſt of foods eaſily digeſtible. No animal food ſhould be allowed, but vegetable, ſuch as farinaceous matter, fruits not much diſpoſed to ferment by the vinous or acetous fermentations, nor prevented from fermenting by drying or expoſure to heat.

To give an example in a regular tertain, whoſe paroxyſms take place at ten in the morning, and where the intermiſſions have become regular and perfect. On the day on which the patient is perfectly

fectly free from the diſeaſe; breakfaſt in the morning may be, where the patient is accuſtomed to it, tea with milk and ſugar, and bread with butter, not rendered empyreumatic with heat. The dinner, ſoup, fiſh and meat, with fruits, all of ſuch kinds as have been enumerated; but this variety only where the patient has been accuſtomed to it. The ſupper may conſiſt of potatoes or rice, and milk, ſago, or other things of the ſame kind, with a moderate quantity of wine.

If the patient ſhould ſleep during the night before the paroxyſm, nothing but a baſon of barley water ſhould be given at ſix or eight in the morning. If inſtead of ten the paroxyſm ſhould not come on till twelve, or later, tea with bread and butter, or ſuch other food may be given at eight in the morning. If the paroxyſm ſhould take place at ten, it will probably go off by eight in the evening; and the patient when he feels eaſy ſhould eat ſago, barley boiled down with a moderate quantity of wine, and bread with milk, &c.

When intermiſſions again become irregular, towards the end of the diſeaſe no ſolid animal food whatever ſhould be employed, but only ſuch as are proper at the beginning of the diſeaſe, in more liberal quantity.

To conclude, for the firſt fortnight food of eaſy digeſtion ſhould be uſed; afterwards more nouriſhing food, according to the perfection of the intermiſſions; again food of eaſier digeſtion when they grow imperfect towards the end.

If the firſt attack of a tertian comes on when there is undigeſted food in the ſtomach, the ſtomach is ſo much diſordered as not to be able to complete the digeſtion. A quantity of undigeſted matter therefore remains in it, ſometimes for ſeveral days, becomes acid, or enters into the putrefactive fermentation, and acts as a ferment upon whatever is thrown in of even the lighteſt food; it counteracts the digeſtive powers of the ſtomach, and continues to propagate the ſame kind of matter as long as it remains there, producing a diſagreeable ſenſation in the ſtomach, and preventing the intermiſſions from being ſo perfect as they

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otherwiſe would be. It is natural to ſuppoſe that the vomiting which takes place at the commencement of the diſeaſe would clear the ſtomach, but that it is not ſo is evident, as where the natural vomiting has been violent and long continued, upon adminiſtering an emetic a large quantity of undigeſted matter has been thrown out. An emetic ſhould therefore be always exhibited when the time between the laſt meal and the paroxyſm has been too ſhort for perfect digeſtion; or there ſhould be other reaſon to ſuppoſe that food remains in the ſtomach.

If during the progreſs of the diſeaſe appearances ſhould again ariſe, which indicate that the ſtomach does not clear itſelf of the whole food, or that there are regurgitations of matter from the duodenum through the pilorus into the ſtomach, the emetic ſhould be repeated. This is indicated by want of appetite on the day on which the paroxyſm does not take place when there are no other ſymptoms of diſeaſe. It would not however be adviſeable to exhibit an emetic, if this happened once only; but if it

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ſhould continue during ſeveral periods of the fever, while the patient lived properly with regard to air and exerciſe it would be neceſſary to repeat the emetic. Noxious matter contained in the ſtomach produces, beſides want of appetite, acid, bitter, or putrid eructations, pain on the forehead, and fur in the back part of the tongue. It is generally ſuppoſed that the quantity of noxious matter is conſiderable, or that it conſiſts of ſolid ſubſtances, but a fluid may diſagree as readily as a ſolid, produce diſagreeable ſenſations, and prevent the ſtomach from acting on the food, ſo that the digeſtive fermentation ſhall not go on properly. If the very ſmall portion, which may act as a ferment, be conſidered, it will appear how ſmall a quantity may affect the digeſtion, and in conſequence the patient be relieved by the emetic, although no great quantity of matter may be thrown off from the ſtomach.

If the emetic be exhibited before the food has had time to paſs down from the duodenum, it may cauſe it to be regurgitated, and ſo thrown off; or if the laſt meal has

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paſſed down from the duodenum, the emetic may occaſion a quantity of bile, pancreatic juice, and the other fluids, ſecreted by the glands of the duodenum, to be ſecreted and regurgitated into the ſtomach, in which caſe the patient appears to throw a great quantity of theſe ſubſtances from his ſtomach. Theſe would not have been there, but for the exhibition of the emetic: this is proved in the ſickneſs produced by the motion of a carriage, to thoſe unaccuſtomed to it, and in ſea ſickneſs, where a great quantity of bile, pancreatic juice, and the other fluids, ſecreted by the glands of the duodenum, are thrown up, when the ſtomach was perfectly empty before the agitation. Therefore as it does not follow, when a ſmall quantity is thrown up in conſequence of an emetic, that no noxious matter was contained in the ſtomach; ſo neither that when bile, pancreatic juice, &c. are thrown up, does it follow that they were contained in the ſtomach, or in any cavity, previous to the exhibition of the emetic, but that a ſecretion might be occaſioned by the emetic, which would not otherwiſe have taken place.

When the emetic is not exhibited till eight hours after the principal meal, if part of the food is thrown up undigeſted, it certainly ſhews a deficiency in the digeſtion. Whether it remains at this time in the ſtomach, or duodenum, it is equally noxious, and ſhould be a cauſe of preferring lighter food.

It happens alſo frequently, that a kind of ſlime forms in the ſtomach in intermittents, which ſeems too tough to be carried through the pilorus, and not capable of the digeſtive proceſs in the ſtomach; this produces the ſame, or even worſe appearances than undigeſted food, even if in ſmall quantity, and is another cauſe of the neceſſity of exhibiting emetics.

It is by no means equal, what means are employed to produce vomiting; but that will be treated of afterwards.

When an emetic is employed for the above purpoſes, it is neceſſary the patient ſhould drink ſome warm watery fluid, to take off the ſtimulus of a vain attempt to

evacuation. This vain attempt happens, when any moving part exerts itſelf to throw a ſubſtance out of a cavity which cannot be evacuated by the effort, or when an effort is made when nothing is contained in it; and pain and other effects of ſtimuli are produced. The patient ſhould drink half a pint of warm water, and when the fit of vomiting is over another half pint; but if no third paroxyſm of vomiting ſhould take place, warm water is not to be given to excite it. But if in the ſecond fit of vomiting a quantity of ſolid or undigeſted food ſhould be thrown up, a third fit ſhould be excited in the ſame manner as the ſecond, which conſtantly clears the ſtomach of all noxious matter, remaining from indigeſtion; therefore it is no longer neceſſary to drink more than a ſufficient quantity of ſome fluid, to waſh the throat and mouth.

To recapitulate what we have ſaid with reſpect to the proper food, and rendering the ſtomach fit for its digeſtion, the only food proper, where the diſeaſe puts on the appearance of continued fever at the beginning,

excepting that exacerbations do not take place in the evening, are ſolutions of farinaceous matter: where there are criſes at the beginning, although very imperfect, farinaceous matter in ſubſtance coagulated and boiled down again until ſoft, ſhould form the nouriſhment: if the criſis at firſt ſhould be nearly perfect, the food during the firſt, or even ſecond week, ſhould be farinaceous matter, and fruits; but in the ſecond or third week, if the criſis ſhould become perfect, or nearly ſo, milk not coagulated, and animal broth may be at firſt added, and ſometimes ſolid animal food of eaſy digeſtion. When the criſis becomes perfect on the day on which the paroxyſm does not take place, according to the ſtate of the patient, food ſhould be exhibited nearly in the ſame manner as in health. No ſolid food of any kind, and of fluids only ſolutions of farinaceous matter, ſhould be allowed for eight hours before the coming on of the paroxyſm. After the paroxyſm is over farinaceous matter in a ſolid form, broths or milk may be made uſe of on the day of the paroxyſm; and finally, the ſto-

mach ſhould be kept free from noxious matter by emetics.

The ſtate of the inteſtinal canal requires particular attention. In a regular tertian, where no accident takes place, the periſtaltic motion goes on with tolerable regularity, excepting during the paroxyſm: ſometimes however, the want of periſtaltic motion, or the diminution of it, which takes place during the paroxyſm, does not go off immediately after the criſis, when the criſis is incomplete; in this caſe, ſo far as it effects the inteſtinal canal, laxatives muſt be employed to prevent the retention of fæculent matter in the inteſtines; for if any remains when the next paroxyſm comes on, the whole ſyſtem is greatly deranged by it, and an imperfect criſis is often produced.

Some practitioners have ſuppoſed that this diſeaſe depended on an humour, which might be evacuated by purgatives. They have not however ſhown from experiment, that any humour, that is to ſay, any fluid or ſolid, poſſeſſing noxious qualities, ſub-
ſiſted

fifted in the fyftem. This opinion might be overlooked as mere hypothefis, were it not to warn young practitioners againft the employment of purgatives in regular tertians, excepting to produce regular evacuations, as they tend to produce irregularity and accidents in the difeafe. The author has feen inftances of the reproduction of the difeafe, after it had been carried off naturally, or by remedies, by the ufe of a purgative, and there are many fuch recorded.

This fubject will be more fully treated of afterwards. All to be done then is to take care that no fæculent matter is retained in the inteftinal canal. This fhould be prevented by employing the moft gentle laxatives.

Purgatives are of feveral defcriptions; there are fome that ftimulate the orifices of the excretory ducts of the glands of the inteftines, and by that means produce a copious flow of watery fluids, that is principally of fuperfluous water, with the falts, and putrefcent mucilage of the blood. Thefe fluids, by their quantity, and poffibly by the

the ſtimulus of the ſalts contained, encreaſe the periſtaltic motion of the inteſtines, and produce copious watery evacuations. Neutral ſalts are purgatives of this kind, for inſtance natron vitriolatum natron phoſphoratum: as are likewiſe ſalts conſiſting of acids and magneſia, as magneſia vitriolata; likewiſe ſolid acids that require a great quantity of water to render them fluid, as Tartar, &c. theſe affect the inteſtines only, and hardly produce any alteration in the general ſyſtem; they are however, not proper for the preſent purpoſe. Copious evacuation is not wanted, but ſimply that any noxious matter ſhould be evacuated.

There are ſeveral purgative juices contained principally in fruits, or the flower leaves of flowers. It has not yet been aſcertained whether they contain one ſubſtance or ſeveral; this ſubſtance is contained in tamarinds, prunes, caſſia; the like kind of purgatives is alſo contained in the flowers of the damaſk roſe, of violets, in manna, &c. Theſe have a kind of mixed operation, they partly ſtimulate the ends of the excretory ducts of

of the glands, opening into the inteſtines, and partly tend to encreaſe the periſtaltic motion of the inteſtines, but rarely have any effect on the ſyſtem generally. Theſe are apt to produce flatulency. Theſe would be more proper than the claſs enumerated, but they are too uncertain in their operation to be depended upon. There are purgatives which encreaſe the periſtaltic motion of the inteſtines alone, and occaſion the contents of the inteſtines to be ſooner carried downwards and evacuated, having at the ſame time little or no tendency to encreaſe the ſecretion, excepting accidentally, as rhubarb, ſulphur, &c. If not given in too large doſes theſe have no effect on the ſyſtem generally; if given in too large doſes they occaſion ſpaſmodic contraction of the inteſtines, and conſequently griping pain, and by that means affect the ſyſtem generally. If however, twenty-five grains only of rhubarb, or a drachm of ſulphur, ſhould be employed in adults, they will commonly have ſufficient effect, and neither violent griping nor affection of the ſyſtem will be produced. Purgatives, ſuch as jalap, ſcammony, colo-

 cinthida,

cinthida and the like, at the ſame time that they act on the inteſtines, make an impreſſion on the whole ſyſtem, are therefore certainly improper.

That theſe effects are actually produced by theſe different kinds of purgatives, is proved by employing them in a man in perfect health. Give a man in perfect health an ounce of natron vitrolatum, or any other of the firſt kinds of purgatives in a proper doſe, diſſolved in four ounces of warm water, to prevent them from affecting the ſtomach too much; in two or three hours a copious watery evacuation ſhall take place, and be followed by three or four others, and the whole effect of the medicine be gone off in four or five hours, with hardly any griping, or any alteration of the pulſe, or any other operation on the ſyſtem. Give a man alſo in perfect health an ounce or two of pulp of caſſia, or any of the purgatives of the ſecond claſs, in five or ſix hours after, griping, flatulency, and diſorder in bowels, a half watery, half fæculent flatulent evacuation, ſhall take place,

followed by borborygmi, and one or two evacuations of the ſame deſcription. Give to another man in health twenty-five grains of rhubarb, in two or three hours afterwards he ſhall feel a diſagreeable ſenſation in his bowels, followed by ſome griping, and ſoon afterwards a copious fæculent evacuation ſhall take place, perhaps a ſecond one of the ſame kind, the perſon not feeling any other affection of the ſyſtem, nor any frequency of the pulſe. Give to another perſon in health fifteen grains of jalap, in an hour or two he will feel uneaſineſs in his ſtomach, a diſagreeable ſenſation all over his body, the pulſe will be quickened, and with perhaps leſs griping than when the caſſia or rhubarb were exhibited, there ſhall be three or four copious watery evacuations follow afterwards, with moiſture on the ſkin, or ſometimes copious ſweating.

Indeed it is poſſible by mixing the different ſpecies of this fourth kind together, and exhibiting ſmall doſes, to produce the effect without making any great impreſſion on the ſyſtem; but it is unneceſſary to have recourſe

to

to them when there are a ſufficient number of the proper kind. Generally great advantages are derived by mixing different ſpecies of purgatives together; but this diſquiſition would lead to too great a digreſſion in this place; we may only notice that for the purpoſe of keeping the primæ viæ clear of fæculent matter in regular tertians, it is better to mix rhubarb, ſulphur, &c. together, then to exhibit them ſingly.

When laxatives are employed, their operation ſhould be entirely over, and the inteſtines perfectly quiet, before the commencement of the next paroxyſm. When thoſe which increaſe the pariſtaltic motion only are exhibited, it is long before their effect has entirely ceaſed; therefore when it is neceſſary to employ them, they ſhould be exhibited at leaſt eighteen hours before the ſucceeding paroxyſm is to take place.

Excepting at the beginning of the diſeaſe no purgative ſhould be exhibited without there be coſtiveneſs, or diſorder of the inteſtines.

When

When a tertian begins without any crifis, but nearly fimilar to a continued fever, it fometimes happens that the exacerbations take place in the morning, and relaxations at night; fometimes the exacerbations take place in the evening in the fame manner as in continued fever. In the firft cafe the time of relaxation is the ordinary time of fleep, and the patient fleeps tolerably well during the night; but in the fecond the exacerbation being at its greateft height, at this time the patient is prevented from fleeping. It is not proper in either cafe to employ opium, the fleep it produces under thefe circumftances being reftlefs and unrefrefhing. When the paroxyfms and remiffions of a regular tertian become perfect; if the paroxyfms fhould happen at ten in the morning, the firft ftage continuing an hour, or an hour and an half, the fecond two, three, or four hours longer, and a crifis fhould then take place with profufe fweating towards the middle or end of the crifis, the patient falls into fleep from the fatigue of the paroxyfm, fleeps an hour or two; during which time the crifis terminates, and the patient generally wakes

 languid:

languid: if the intermiſſion is perfect he ſleeps ſound during that night, commonly ſweating during the courſe of it, and the next night he ſleeps nearly as in health. If the paroxyſm ſhould take place at four in the evening, the firſt ſtage continues till ſix, the hot fit continuing till ten; ſhould the criſis come on at this time with profuſe ſweating, the patient commonly falls aſleep about twelve or one, and ſleeps without intermiſſion the whole night, waking with ſome degree of fatigue, which however goes off. The ſleep is natural, or nearly ſo on the ſucceeding night. Should ſleep either not take place, or be very reſtleſs, the practitioner is to attend to any accidental cauſe as improper food, fæculent matter contained in the inteſtines. Theſe apparent cauſes ought to be removed before opium is employed, otherwiſe the ſleep produced by it will ſtill be reſtleſs and unrefreſhing.

If want of ſleep or unrefreſhing ſleep ſhould take place without any ſuch apparent cauſe, opium may generally be employed ad-

advantageoufly during the whole time, the intermiffions are regular and perfect. About two-thirds of a grain is ufually a proper dofe. The operation is rendered more effectual by the addition of a fmall quantity of ipecacuanah, or fome active preparation of antimony.

When a regular tertian continues two or three months, and the paroxyfms become flighter, but longer, and run into one another, opium may be employed with great advantage, fhould the fleep be reftlefs and unrefrefhing.

This is fufficient at prefent with regard to procuring reft by opium, or its other effects. The Author will have occafion to attend to it farther afterwards.

When the paroxyfm is about to come on the patient fhould be laid in bed, where no part of the fyftem is difturbed by his fituation. The heart neither has fuch an height to throw the blood as in an erect pofition, nor have the powers of circulation fuch a column

column of blood to ſuſtain and overcome in the aſcending veins. The heart therefore and the powers of circulation are left to employ their whole force unincumbered, during the paroxyſm of the diſeaſe. When in an horizontal poſture the body is ſupported on a great number of parts, conſequently the preſſure is more equally on every part of the body; the ſyſtem is not exhauſted by an exertion of muſcular power to keep the parts ſupported in balance. A more equal degree of warmth, moiſture, and relaxation takes place in bed over the whole body, and gives a greater diſpoſition to the criſis taking place early and being more perfect. There are no ligatures applied to any part ſo as to prevent the blood from flowing freely. The patient ſhould go to bed about an hour before the commencement of the paroxyſm continuing there during the whole of it. This is not ſo neceſſary however towards the end of a regular tertian, when the paroxyſms become ſlighter and are extended to a greater length.

It is by no means proper that the patient ſhould be in bed during the intermiſſions, excepting at the ordinary time of ſleep.

The muſcles looſe their firmneſs by continuance in bed during health for a longer time than neceſſary for ſleep. The whole body becomes plumper, ſofter, more diſpoſed to be acted upon by every thing that has effect upon it, ſuch as emetics, purgatives, expoſure to cold, ſtimulants, and the cauſes of diſeaſe. The ſtrength of the moving parts is very conſiderably diminiſhed by laying in bed: the powers of digeſtion are diminiſhed, the appetite is not excited from the ſame want of food. Leſs food is received into the ſtomach, and the ſame food is more apt to produce diſturbance in the ſyſtem. By continuance in bed a man alſo becomes languid in his mind, and more unwilling to exert himſelf in exerciſe, or labour of any ſort.

During the intervals of the paroxyſms, excepting that the patient ſhould be allowed to ſleep, if he be diſpoſed juſt after the

parox-

paroxyſm is gone off, and during the natural time of ſleep the patient ſhould dreſs in his ordinary cloathing, and that even in caſes where he is too weak to remain in an upright poſture, which however does not happen in the caſe the author is now treating.

The exertions which take place during the paroxyſm, leave the patient ſomewhat weaker after the criſis has taken place and the whole paroxyſm completely gone through, then he would have been independent of it. The natural powers of the body ſoon get the better of this weakneſs, and reſtore the patient to his former vigour. When a new paroxyſm ſucceeds a former one, after a ſhort interval, this will alſo exhauſt the powers of the body in a ſimilar manner, and leave the patient ſtill weaker. Were the diſeaſe however to conſiſt of two regular paroxyſms only, both terminated by complete criſes, the natural powers of the body would probably evercome this ſecond weakneſs. But when paroxyſm returns after paroxyſm, as is the caſe in even the moſt regular tertian, and repeated weakneſſes are left after each, the

does not recover ſufficiently in the intervals to encounter the next, with his powers perfect, and of courſe every ſubſequent paroxyſm will leave him ſtill weaker, ſuppoſing that the diſeaſe were perfectly regular from the very beginning, and during the whole of its progreſs.

When there is hardly any remiſſion at the beginning of a tertian, and afterwards imperfect intermiſſions, there is not time during the interval, for the ſtrength to be recruited, in the ſame manner as when the intermiſſions are perfect, or nearly ſo. In this caſe, by the time the intermiſſions become regular and tolerably perfect, the patient is already much reduced in ſtrength, and if care be not taken to keep up the powers of the body after the intermiſſions have become regular and perfect, the patient may not be able to ſupport the ſhocks of the ſubſequent part of the diſeaſe. He may either ſink in the cold fit, or when towards the end, the paroxyſms grow more irregular, weakneſs may take place in ſuch a degree as to prove fatal, or the diſeaſe

may be rendered irregular. When the paroxyſms become regular, the practitioner ſhould therefore endeavour to reſtore the ſtrength of the patient as much as poſſible to its natural ſtate.

The firſt attention to this indication, is to employ proper food, to take care that the primæ viæ perform their functions well, that ſleep be encouraged, and that the patient ſhall not indulge himſelf in bed when it is not the time of natural reſt, and when the paroxyſms are completely over.

Practitioners have imagined that ſomething more might be done to recruit the ſtrength of the body, than merely leaving it to theſe natural means: that medicines might produce this effect; but their ideas on the ſubject are very much confuſed, which renders it neceſſary to inveſtigate the ſubject more particularly.

The idea of ſtrength which firſt preſents itſelf in inanimate matter is coheſive power. Steel requires a greater force to break it than marble, therefore is conſidered ſtronger.

Although

Although the ſame power will bend an equal bar of gold which will not bend an equal bar of ſteel, yet if equal bars of theſe metals be fixed at one end ſimilarly in every reſpect, a weight at leaſt four times as great will be required to break the gold than will be neceſſary to break the ſteel, if hung at the other end of the bar. In this reſpect the gold bar is the ſtrongeſt, but if the idea of ſtrength be taken from their bending the ſteel. Both theſe ideas of ſtrength have been adopted by practitioners in medicine. The ſtrength conſiſting in inflexibility, may be admitted in parts of the human body, ſuch as bones, although not rigorouſly. A bone is ſaid to be ſtrong which does not break when a great power is applied to it; weak when broken by a ſlight one.

That ſtrength which prevents parts from being torn aſunder, has often been conſidered as ſtrength in medicine, as when the gaſtrocnemii muſcles contract ſuddenly, or with great force, the tendo achilles ſometimes gives way; it wants therefore ſufficient coheſive power to apply the force of

theſe muſcles to the foot. In this caſe the muſcular power of theſe muſcles cannot be ſaid to be diminiſhed, becauſe their force of contraction is ſufficient to overcome the ſtrength of the tendon; it is the tendon only that is weak. In ſimilar caſes therefore it cannot be ſaid that the body generally is weak.

When the whole of a contractile fibre of a muſcle contracts at once, all the particles muſt come nearer each other in the direction in which the fibre contracts; it is impoſſible that particles can come nearer one another, and go to a greater diſtance at the ſame time and in the ſame direction, therefore every muſcular fibre in contracting, muſt poſſeſs a power of reſiſting its whole force in every part, ſo as not to break by its own power of contraction. Suppoſing one half of a fibre of a muſcle ſhould contract, the other half ſhould remain at reſt, that which remains at reſt muſt be looked upon in the ſame light as a tendon, and if broken through would not evince any want of muſcular power, excepting, perhaps, ſo

far

far as that the exertion not being in the whole muſcle, the effect would be leſs.

The many cavities in the body of various forms deſtined to contain fluids or ſolids, may be divided into two claſſes, thoſe opening externally, and thoſe not opening externally; the gall bladder for inſtance is of the firſt kind; of the ſecond, the cavity of the ventricle of the heart. There is alſo a third kind of bag, which is not naturally deſtined to contain any thing, but merely ſo much fluid as to moiſten the ſurface ſo as to allow of motion, ſuch as the cavity of pleura and peritonæum. The firſt kind, deſtined to receive and contain, for a certain length of time, matters thrown into them, may ſometimes be filled with ſuch a quantity as to diſtend them to a degree that would burſt them, had the body and the bags themſelves loſt their life. In this caſe the coheſive power might be conſidered as too weak. This hardly ever happens in the living human body. The ſame may be ſaid of thoſe cavaties of the ſecond kind, which do not open externally. Of the cavities which naturally contain only a ſuf-

ficient

ficient quantity of fluids to moiſten them, there are many inſtances of fluids thrown in ſo as to burſt them. The ſkin of the leg for inſtance burſts, in ædæmatous ſwelling; but this has hardly ever been attributed to weakneſs. It has been ſuppoſed that medicines capable of encreaſing the cohesive power of the fibres, or membranes of the body were capable of giving greater contractile power. Alum, oak-bark, and other aſttringents encreaſe the adheſive power of the ſkin of a dead animal conſiderably, therefore have been ſuppoſed by many to act in this way as ſtrengthening remedies, not conſidering that if power of contraction depend upon coheſive power, it would be abſurd to apply the ſmall doſes of thoſe medicines uſually exhibited. What tanner would attempt to tan a hundred weight of leather with a drachm of oak bark.

Muſcular ſtrength does not therefore depend on coheſive power.

Elaſticity is the property by which the particles of an inanimate ſolid come nearer to, or recede from one another.

If

If a ſteel rod be bent, the particles on the inſide of the curvature will be brought nearer to one another, while the particles on the outſide of the curvature will be carried to a greater diſtance, but without loſs of continuity, for as ſoon as the bending power is removed, the particles that were brought nearer will force themſelves to a greater diſtance, and thoſe which were on the outſide of the curvature will approach each other, and not only ſo as to reſtore the bar to its original ſtate, but likewiſe to give it a bend on the oppoſite ſide, and ſo it will continue to vibrate for ſome time.

If a rod of any elaſtic ſubſtance, ſuch as ſteel or catgut be fixed perpendicularly at the upper end, and a weight be hung at the lower end, the rod will be drawn out to a greater length, but at the ſame time become ſmaller in diameter. Upon removing the weight it will return to the original length and diameter, and vibrations will take place in it, which may be conſidered as ſimilar to thoſe which ariſe, on removing the bending power from the bent rod.

If a force be applied to both the ends of a cylindrical rod of ſteel, ſo as to preſs them towards one another, the rod will be ſhortened and rendered of a larger diameter; on removing the power the rod will return to its former length and diameter; ſimilar vibrations taking place until it ſettles at its proper length.

If a ſteel ring be preſſed forward upon a cone, whoſe diameters encreaſe ſlowly, the diameter of the ring will become greater, but on withdrawing the cone, vibrations will take place in the ring, until it ſettles at its original diameter and thickneſs.

If a rod of a perfectly unelaſtic ſubſtance be fixed at one end, and the other be drawn in the direction of its length, it will break without having been lengthened in the leaſt.

An elaſtic rod thus drawn out will allow itſelf to be lengthened to a certain degree, but will afterwards be broke.

If a dead mufcular fibre be fixed at one end, and a weight be fufpended at the other, it will be drawn out to a greater length; the weight being removed it will return to its original length.

In the fame manner, if a dead mufcular fibre be preffed together by a power applied at the ends it will be rendered fhorter and thicker; on removing the power it will return to its former length and fize.

If a dead mufcular fibre be bent into a ring, and any power be applied to diftend it, its diameter will be encreafed, but when the power is removed, it will will return to its former ftate.

So if a power be applied to leffen the diameter of a dead mufcular ring, it will contract, but on removing the power, will immediately increafe to its former fize, and vibrations would take place were nothing to act but elafticity.

The moving fibres of the body are therefore endowed with an elaſtic power, by which, on being either extended or contracted beyond their natural ſtate, they will be reſtored as ſoon as the power is removed, by which they were diſtended or contracted.

Whether the muſcular fibres in the living body are prolonged beyond what their elaſticity would allow, or ſhortened more, is a queſtion only to be decided by experiment.

If an animal be ſuddenly killed by a cauſe not affecting the elaſticity, it will be found on laying bare any muſcle, and diſſecting it out, that the muſcular fibre will extend on replacing it, far beyond the length from its origin to its inſertion; its elaſtic power, a power independent of life, remaining the ſame, the power of life only being deſtroyed. From this it will appear, that it had been contracted by ſome other power, while the animal was alive, more than it would have contracted by its elaſticity; therefore that there

there is a power constantly contracting the muscular fibres of a living animal to a shorter length than they would be contracted by their elasticity.

After the life is entirely gone out of an animal which had been killed in the same sudden manner, the blood vessels, which are perfectly cylindrical, and perfectly full, are immediately enlarged, so as to be capable of holding a much larger quantity of blood. There is not blood enough nearly to fill the ventricles of the heart; there is so little blood in the arteries, in proportion to their cavities, that the antients supposed they contained air only. The capillaries are not nearly full of blood, which appears from the paleness of the different parts of the body; they become florid, if an injection be thrown into them of no deeper hue than the blood. The veins, instead of being cylindrical, are flat, and not half full of blood. It cannot be denied that the elasticity remains the same in such a death. It is therefore constantly tending to enlarge the vessels, and prolong every moving fibre, but is overcome by a superior power, which exists

exiſts in conſequence of the life of the part.

It has been ſhewn therefore, that the fibres of the body, and the parts capable of producing any action, are not governed by the adheſive power of their particles, nor by their elaſticity, as they are always contracted in one direction, more than they would be by their elaſticity. This other contractile power has generally been called muſcular action.

Muſcular action ſeems to be exerted when the animal is at perfect reſt. A contraction takes place continually in the moving part, which is greater than the elaſticity of the part, and is conſtantly counteracted by it. When the tone of a part is ſpoken of, this is to be underſtood.

There is an inſtance of this conſtant action counteracted by the elaſticity of the part itſelf in bivalve ſhell fiſh: there is in a cockle an elaſtic ligament on the outſide of the ſhell, which endeavours to open it, and muſcles which counteract the elaſticity of this

this ligament, which, when they exert their ſorce, overcome the elaſtic power of the ligament, and ſhut the ſhells: when theſe are not forced into action by the animal's dread of an enemy, the elaſtic ligament opens the ſhells to a certain degree, but not nearly ſo much as if the muſcles were cut through, and the ligament left entirely to its own elaſticity. The muſcles therefore, when the animal is at reſt, are ſtill contracted, ſo as in a certain degree to overcome the elaſticity of the ligament; and this contraction is the tone of the muſcles.

It is the ſame where the elaſticity of the muſcular fibres themſelves counteract the tone. The urinary bladder, for inſtance, which in a body, recently and ſuddenly killed by any means, which deſtroys the life in all the parts, ſuch as a blow on the ſtomach, would allow a quart of urine to be contained in it without overcoming its coheſive power, or burſting it, or without reſiſtance by its elaſticity; while the animal is alive, ſometimes, will not allow itſelf to be diſtended, ſo as to contain a pint without

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being ſtimulated to evacuation, ſometimes not half a pint. It will at the ſame time allow itſelf to be diſtended to a leſs degree, without any ſtimulus at all. This reſiſtance in the urinary bladder to be diſtended above a certain degree in a living animal cannot be from the coheſion of its particles, for it may be diſtended twice, thrice as much, or more, without burſting: nor can it be from its elaſticity, for the elaſticity remains the ſame after its death, and yet it will then allow itſelf to be diſtended to a greater degree without any reſiſtance; nor can it be from its muſcular exertion, for when the muſcles contract, they evacuate its contents. It might be ſuggeſted indeed that it was not the muſcular fibres of the bladder itſelf that evacuate its contents, but the preſſure of the muſcles of the abdomen upon the bladder; but every man from his feelings will perceive, that although the preſſure of the muſcular fibres of the abdomen do indeed aſſiſt in evacuating the bladder when much diſtended, yet very often the evacuation is evidently made without any exertion of the abdominal muſcles.

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This is further proved by cafes where the mufcular fibres of the bladder become paralytic, in which cafe the urine is not evacuated, although the mufcles of the abdomen have their full power.

It is evident therefore, that the extent which the urinary bladder will allow itfelf to be diftended does not depend on the cohefive powers of its fibres, nor upon their elafticity, nor upon the mufcular exertions when ftimulated to contract, but to a difpofition in the mufcular fibres to allow themfelves to be diftended to a certain degree and no farther, without being ftimulated to contraction. This difpofition is their tone.

In the ftomach likewife a contraction takes place, which will allow it only to be diftended to a certain degree, when empty it will readily admit a certain quantity of food, but if it be attempted to throw in a greater quantity, it will refift the reception of the furplus; pain, uneafinefs, and naufea will be produced, although the ftomach is not diftended nearly fo much as its cohefive power or elafticity would allow.

The other power exerted is a ſtill farther contraction of the moving fibres, which ſhortens them much beyond their tone, and is called the action of a part, as when the ſtomach contracts upon the food in digeſtion, and forces it through the pylorus, or when any muſcle moving an extremity contracts, ſo as to produce that motion. This contraction does not remain conſtantly the ſame for any length of time, for firſt it is evidently alternate, as in the action of the auricle of the heart, which no ſooner contracts but it relaxes again, and ſoof the muſcles of reſpiration, the periſtaltic motion of the inteſtines, where the alteration is very evident. In the muſcles extending, or otherwiſe moving an extremity, the alternate action is not ſo apparent; but there it may be rendered viſible, by magnifying it by placing for example a long flexible rod in the hand of a ſtrong man; if he extends his arm, the motion of the end of the rod will evidently ſhew that the muſcles of the arm are making alternate contractions and relaxations.

There are therefore two muſcular powers, one keeps the muſcular fibres when at reſt,

contracted to a certain degree beyond their elaſticity, the other produces a ſtill greater contraction, which is only temporary.

The tone of a part is not always the ſame. The ſtomach of the ſame perſon, for inſtance, will at times allow itſelf to be greatly diſtended without making reſiſtance, at others it will reſiſt, if a ſmall quantity of food or drink be thrown into it.

It does not follow becauſe a part is ſtrong, that the tone is ſuch as to allow of only a ſmall diſtention. There is a certain degree of tone which is the natural and proper one for a moving fibre. When the ſtomach is weak it will frequently only admit a ſmall quantity of food, without being ſtimulated by the diſtenſion; when ſtrong it will admit frequently a great quantity of food without making much reſiſtance.

Where a moving part conſiſts of many moving fibres, and in one of theſe fibres

there is a proper tone; another fibre is contracted beyond its ordinary tone, another at the ſame time too is diſtended by its elaſticity beyond it, that part can never be ſaid to be ſtrong, becauſe if brought into action, that fibre only will produce the proper effect, which is of the ordinary length according to its natural tone.

The frequent attacks of a regular tertian are apt to weaken the tone in both ways.

Afer a tertian has continued ſome weeks, the ſtomach and inteſtines inſtead of poſſeſſing an uniform tone are contracted in ſome places, in others relaxed to a greater degree, ſo that ſpaſmodic contraction takes place in ſome parts, flatulency in others. The muſcles in the extremities become flabby. The action of all the parts therefore becomes leſs powerful and regular than in health. To remedy this a claſs of medicines have been employed during the progreſs of the diſeaſe, with a view to reſtore and keep up the tone. Theſe medicines as contained in the Materia

Medica

Medica of the London College are abrotanum, abſinthium maritimum, abſinthium vulgare, carduus benedictus, centaureum minus, chamæmelum, cinchona, columba cortex aurantium, cortex limonum, gentiana, quaſſia, ſantonicum tanacetum; all theſe contain a bitter juice. Whether that bitter juice be the ſame in all, as the ſugar, and aſtringent matter of all vegetables are the ſame, has not been determined by chemical experiment. They contain various other matters which have medicinal powers; the abſinthium contains an eſſential oil totally different from its bitter juice; cortex aurantium not only an eſſential oil, but alſo an aſtringent juice, perfectly diſtinct from the bitter one. This kind of bitter juice itſelf ſeems to have the ſame effect in preſerving or reſtoring the tone, from whatever plant it is taken, and various preparations of iron have alſo a ſimilar property. But how theſe ſubſtances ſhould contract fibres too much relaxed in their tone, or relax fibres too much conctracted in it, is not at all known. There are ſome remedies whoſe mode of action can be eaſily aſcertained.

When a quantity of ſuperfluous acid is formed in the ſtomach, every chemiſt muſt know that chalk or alkali thrown down will unite with the acid, and deſtroy its acidity. Any man acquainted with the natural hiſtory of the inſect or reptile which produces the itch, would be able a priori to apply a remedy. He would know, that it was apt to creep from the body it already occupies to the body of another man which came into contact with it. That it would bite and ſtimulate a part where the mucous was ſoft, as between the fingers for inſtance, and occaſion ſcratching, and excite a ſufficient degree of inflammation to produce a pimple. That it would lay its eggs and propagate in this pimple, from whence the animal itſelf has frequently been taken out and ſhewn in a microſcope. So far ſkilled in this diſtemper, he would naturally apply a poiſon, perhaps ſulphur with greaſe, if he had no idea of cleanlineſs, but if he had a greater regard to cleanlineſs, he might waſh the parts affected with a ſolution of corroſive ſublimate in water, and he would continue the application until the animal itſelf

was killed, and all its eggs hatched, and all its young deſtroyed, which happens in about a month, and ſo cure the diſeaſe. In theſe inſtances the mode of action of the medicine is known.

Here the mode of action is ſufficiently evident, but when a medicine is to act upon the living powers of the body, it is impoſſible to account for its action from mechanical or chemical principles, becauſe the living powers are not governed by mechanical or chemical laws, and all the knowledge reſpecting them muſt be learnt by experiment only. So the chemical effects of a chemical operation are known; but how theſe effects are produced is not known. We know that ſulphur and pure air form vitriolic acid, but why no man can tell.

A bitter medicine does not act in reſtoring tone by encreaſing the adheſive power of the moving parts, for the tone does not depend upon the adheſive power; neither

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does it act upon the elasticity, for by this the tone is counteracted.

Where its tone is diminished, so that a moving part is contracted too much or too little, in consequence of a disease; after the entire cessation of the disease, as after an hemorhage arising from an accidental cut into a blood vessel, the tone will be much sooner restored if bitter remedies are exhibited than it would be naturally. That is, if spasmodic contractions should take place they will sooner go off, if the muscles become flabbly they will sooner become firm; if water be deposited, so as to form ædæmatous swellings, the tone will be restored to the exhalants and absorbents, and water will be no longer deposited. These instances are sufficient for demonstrating that these medicines have a power of restoring the tone.

The action of many medicines producing effect upon the living powers is entirely upon the stomach. This proposition will

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be conſidered more fully afterwards. Theſe bitter medicines and preparations of iron for inſtance do not appear to be carried into the blood veſſels and applied in different parts of the body, but to act in the ſtomach alone.

Theſe medicines appear to be more efficacious when mixed together than when exhibited ſingly; and this opinion is ſupported by the preſcriptions of almoſt every practitioner who has conducted the caſes of many patients. Why this is the caſe would lead the author at preſent into too great a digreſſion.

It is not neceſſary to give theſe bitter medicines in ſubſtance, an infuſion or tincture of them may be employed with equal advantage, and are leſs diſagreeable to the patient in this form. Nor is it neceſſary to give them from the beginning of the diſeaſe, they would indeed be hurtful before perfect intermiſſions are produced. Perhaps, it is not neceſſary to exhibit them until appearances of want of tone begin to take place.

They ſhould be given during the intermiſſion, in doſes equivalent to a drachm of the bark of cinchona, exhibited every ſix or eight hours.

Whether theſe remedies give a ſtronger power of action, as well as reſtore the proper tone is uncertain. In one light, a due tone muſt always produce a ſtronger action. If there be three fibres for inſtance in a moving part, and one of thoſe be contracted too much, one properly the third too little; if the tone be reſtored, ſo that all three are by their tone properly contracted when brought into action, the whole force of the three will act together, which would not be the caſe while the contraction from the tone was different.

Another remedy, viz. exerciſe both encreaſes the tone and power of action.

Daily experience proves, that the power of action of a muſcle is encreaſed by bringing the muſcle frequently into action. The bulk and elaſticity of the muſcles are alſo encreaſed by it.

Where exercise is employed to encreaſe the power of action, or in other words the ſtrength of the human body, it muſt be univerſal. Only, that muſcle or ſet of muſcles that is brought into action have their power encreaſed. A gold-beater exerts the powers of his arms only, while he leads a ſedentary life: the ſtrength of his arm is conſequently encreaſed, while that of the muſcles of the lower extremities is even diminiſhed; and he is ſo far from being generally ſtrong, that he is ſubject to debility and want of tone in the whole ſyſtem, excepting his arms.

There is not a ſufficient quantity of living power in any animal to keep any part in conſtant action, excepting ſuch parts whoſe actions are abſolutely neceſſary for exiſtence, ſuch as the action of the heart, the motion of the muſcles of reſpiration, &c. It is neceſſary that all the other exertions of the body and mind ſhould reſt for a certain length of time, that the organs of ſenſation ſhould not give ideas of external objects to the mind, perhaps, that the operations

rations of the mind ſhould be ſuſpended, as they are perhaps in ſleep, that the muſcles ſhould be brought to reſt.

Exerciſe of any kind exhauſts and renders ſleep more neceſſary, and if it does not take place, the exerciſe cannot be continued without weakening or deſtroying the body.

Exerciſe diminiſhes the quantity of blood, which is directly proved when a man is forced to labour much without an adequate quantity of food. He not only becomes emaciated, but there is actually much leſs blood in his veſſels, as is eaſily ſeen from the ſmallneſs of the veins during life, and the ſmall quantity of blood he can bear to loſe without occaſioning death. It is alſo ſeen upon diſſection after death, the muſcles being univerſally pale, and a very ſmall quantity of blood being found in the veins. The great appetite which takes place in a man in health after exerciſe is alſo an indirect proof, the large quantity he is capable of digeſting, and the great evacuation by inſenſible perſpiration.

Exerciſe

Exercise, with proper food and sleep, in a pure air gives strength to the system. Exercise makes the blood return faster upon the lungs where is it exposed to pure air. It is not known by what means the blood is prevented from passing through the lungs if a sufficient quantity of pure air is not applied to it. It is certain, however, that if the due proportion of air is not inspired, a quantity of blood is brought to the lungs, which does not readily pass through them, but is accumulated in all the vessels about the right side of the heart. Anxiety and oppression about the prœcordia take place; derangement and loss of strength arise in the whole system in consequence. It is therefore necessary, that a proper quantity of pure air should be applied to the lungs, to allow the blood thrown upon them to pass through them, otherwise the above appearances, followed by debility, will take place.

It is proved, that exercise occasions a larger quantity of blood to be brought to the breast, by the veins being universally rendered much fuller, a much larger quantity

tity of blood flowing out in a given time if one of them be opened. If it flows in the veins when fuller with encreaſed velocity more muſt be carried to the lungs.

In one reſpect the air of the atmoſphere is to be conſidered pure in proportion as it contains the vapour neceſſary for the reſpiration of animals. This vapour, which has been called pure air, generally forms about one-fourth part of the atmoſphere; but as it has been but lately diſcovered what proportion it generally bears, it will require ſome time to inveſtigate how far a greater or leſs one may be beneficial or prejudicial. It has been found, that the conſtant and various currents in the atmoſphere keep it nearly the ſame in the proportion of its contents. If a man be ſhut up in a cloſe place where there is not his proportion of pure air, difficulty of reſpiration will take place, and labour or much exerciſe will weaken inſtead of ſtrengthen him.

The atmoſphere may contain vapours, or being very viſcid, powders may float in it that

may be hurtful to the lungs or prevent the blood from paſſing through them ſo readily: gas or fixed air for example, which is always found in the atmoſphere, vapour of nitrous or muriatic acid, putrid vapour, air of large towns having powdered horſe dung, ſoot, gravel, aſhes, ſuſpended in it. Reſpiration will always be difficult when theſe ſubſtances are inſpired, and therefore prevent the good effects of exerciſe.

The difference between labour and exerciſe is the attention of the mind. That exertion of the muſcular power is exerciſe which is employed with the accord and delight of the mind, and then tends to give ſtrength to the ſyſtem. On the contrary, that which is employed againſt the conſent of the mind, inſtead of giving vigour diminiſhes the ſtrength. But it is extremely difficult in many caſes, to diſcriminate what exertions of the body are with or without the accord of the mind, for mankind would naturally be always at reſt, if not ſtimulated into action by ſome paſſion of the mind, or ſome real want. A North Ame-

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rican indian remains at reſt ſitting, looking ſtraight forward, until forced into action to procure himſelf neceſſary ſubſiſtence, or until excited by paſſion or pain. In ſome meaſure, all exertion whatever is againſt the will of the mind, but that in which the paſſions are excited, and which is not produced by abſolute neceſſity is particularly the kind which gives ſtrength. Whatever exerciſe therefore is employed, merely for the purpoſe of reſtoring ſtrength, is leſs efficacious than where an inclination for it is excited. If a man rides out for his health, the anxiety he feels prevents the exerciſe from being uſeful; but if he is going any where, where he will be amuſed as in following a pack of hounds, he will be ſtrengthened.

Exerciſing a diſeaſed part tends always to derange it ſtill more, excepting when the diſeaſe is want of tone only. Any attempt to exerciſe an inflamed muſcle would encreaſe the inflammation without giving ſtrength. A muſcle affected with rheumatiſm would be weakened inſtead of

ſtrengthened by exerciſe while the rheuma-tiſm remained, and ſo generally.

In the beginning of a regular tertian, when the intermiſſions are imperfect, ex-erciſe ought to be avoided.

When conſiderable relaxations take place, the pulſe returning for many hours to its natural ſtate, the uneaſineſs and reſtleſſ-neſs going off, the patient ſhould have his ordinary cloaths put on during ſuch relax-ation. Although he is only able to lie upon the bed, ſomewhat more exerciſe will be uſed than if confined to it. Fric-tion by rubbing with a fleſh bruſh or a cloath, is a ſpecies of exerciſe which does not appear to be exertion to the patient. It was much more frequently employed by the Greeks and Romans, than it is at preſent, probably, becauſe the warmth of climate al-lowed of it without danger of the patient's catching cold. Where proper means are taken to obviate this difficulty, friction may be ad-vantageouſly uſed in many inſtances, it does

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not exhauſt the ſtrength, and is extremely agreeable to the patient.

When the intermiſſions at the beginning of a tertian are very imperfect, hardly any other exerciſe than friction ſhould be uſed. When they are ſomewhat more perfect, but not ſo as to admit of great exerciſe, the patient for the firſt week or fortnight, after more perfect intermiſſions have taken place, ſhould only go out of his bed-chamber into another room where the air is purer. If he lives in the country, and the weather be fine, he may walk in a garden or even among fields for a little way; but always ſo, that too great attention of the mind to the ſtate of his health be not excited.

After the diſeaſe has continued a fortnight, if the intermiſſions have become nearly, although not quite perfect, a greater degree of exerciſe may be uſeful, ſuch as being carried in a chair or litter, which although diſuſed at preſent, would often be advantageous, if the patient were in a ſituation

to employ it; the motion of a coach may ſucceed as exerciſe of ſomewhat more violence, or the patient may be carried in a boat. Where the latter is uſed, it muſt only be upon a river or canal, where neither marſhes or ditches are upon their banks. If a canal, it muſt be of conſiderable length, ſo that the water does not ſtagnate; the vapor ariſing from ſtagnating water often occaſioning the paroxyſms to be prolonged, and the intermiſſions to be diſturbed. It muſt be remembered, that a moiſt atmoſphere is the only cauſe that has an effect on the diſeaſe after it has once been produced; therefore, a boat can only be uſed ſucceſsfully in a ſerene and clear atmoſphere.

When the intermiſſions have become abſolutely perfect, more violent exerciſe is uſeful, ſuch as riding on horſeback.

In theſe exerciſes all the muſcles of the body are exerted.

Many others frequently recommended are injurious, as they militate againſt the

rules to be obſerved. Such are all great exertions of the muſcles performed in the bed-chamber of the patient, or in any apartment where the air is confined; as ſtriking heavy pieces of lead together, or forcing the body up and down on a chair ſupported by ſprings, in theſe the air is contaminated by the reſpiration of the patient and any other animal in the room, the patient's mind is occupied with anxiety on thinking of the neceſſity of thus exerciſing himſelf. The utility of exer-ciſe in a carriage of any kind will be di-miniſhed, unleſs the patient's mind be at the ſame time amuſed with the variety of proſpects or objects preſented to it, by the change from confinement, &c. therefore a chair or litter, although ſo eaſy in them-ſelves, are often leſs proper than a carriage, where there is converſation, which may contribute to the amuſement of the pa-tient.

Where riding for exerciſe is employed, the patient ſometimes becomes weaker in-

ſtead of ſtronger, unleſs he takes pleaſure in the country he paſſes through, or has ſome object in view at the end of his journey.

All kinds of exerciſe for the purpoſe of buſineſs, conſidered by the patient as labour, are hurtful, but with the exception that greater anxiety may ariſe in the mind from ſuſpicion that others are negligent of his concerns. Thus a ride of ten or fifteen miles, ſo that the patient does not over fatigue himſelf, will often contribute greatly to the reſtoration of ſtrength, if it be to ſee whether ſomething he intereſts himſelf in be properly performed, eſpecially if it turns out according to his wiſh. Theſe exerciſes may be continued during the time the intermiſſions remain perfect.

When a tertian that has been regular for a time with perfect intermiſſions becomes again irregular, the paroxyſms ſlighter although longer, and the intermiſſions leſs perfect, the ſame tonic medicines and the ſame exerciſe may be continued.

Long experience has proved that when a diſeaſe is diſpoſed to go off, it diminiſhes and goes off with as great obſtinacy as it encreaſes at the beginning.

Many practitioners have conceived that when a tertian ariſes in a temperate or cold country, the fever itſelf is the natural cure of ſome other evil in the conſtitution, therefore that a regular tertian (eſpecially) ſhould be left to go through its natural courſe. Others more ſanguine, perhaps more wiſe, think the ſufferings of a patient during the courſe of the moſt regular tertian ought to make them employ every poſſible means to prevent the diſeaſe from going through its natural courſe, and to relieve the patient immediately.

There could not be a moment's heſitation in determining to reſtore the patient to perfect health at once, were there any remedy or mode of treatment that would certainly prevent the returns of the paroxyſms of a tertian intermittent, and take off the ſymptoms remaining after the criſis, ſo that no other

other diſeaſe ſhould follow. But there moſt undoubtedly is no medicine uniformly efficacious, or that always leaves the patient in tolerable health and ſecure of not being deſtroyed by the remains of the diſeaſe or by any other diſorder ariſing in conſequence of it.

Were there any ſuch, why ſhould different practitioners attach themſelves to particular varieties of bark; recommending the brown, the yellow, or the red, with ſuch decided preference? Why ſhould they prefer arſenic or zinc, if any one were uniformly ſucceſsful? It would not be an object for men of experience, phyſicians who have practiſed in every caſe of the diſeaſe, to recommend one or the other variety, nor any other remedy employed for the cure of regular tertians. In many caſes of perfectly regular tertains the moſt ſkilful practitioners have been baffled in the uſe of Peruvian bark, and every other medicine recommended as uſeful in the diſeaſe. Hence the neceſſity of laying down a mode of treatment to be purſued,

fued, fuppofing the difeafe to go through its natural courfe, which the Author has done.

There can be no doubt but that the paroxyfms of regular tertians are repetitions of the paroxyfm of fimple fever. The fymptoms are in all refpects exactly the fame, excepting that in a fimple fever all the appearances of the difeafe are carried off by the crifis. At the beginning of a tertian the fymptoms are never entirely carried off by the firft crifis, excepting when the patient had been before afflicted with the difeafe. In the middle of the difeafe, when perfectly regular, there is no difference whatever between them, excepting there being only one paroxyfm in a fimple fever; in a tertian a number of paroxyfms. Towards the end of a tertian the paroxyfms are lefs fevere with more imperfect intermiffions.

The only apparent reafon for the return of the paroxyfms in a tertian feems to be that the firft crifis is imperfect, It appears probable that fymptoms of the firft ftage remaining

remaining may, after a time, encreafe fuddenly, and produce a new paroxyfm, why rather at the end of forty-eight hours than at any other period cannot be accounted for.

Since alfo when the patient has been before afflicted with a tertian, even after the interval of a twelvemonth, a frefh attack of fever takes place, which terminates in a regular crifis, the paroxyfms neverthelefs return, it would feem that the habit acquired by the former tertian occafioned fimple fever to take this form. Hence it may be prefumed that when the intermiffions become perfect, the difeafe is continued by habit.

Upon thefe grounds attempts may be made to carry off the difeafe, without fuffering it to go through its regular courfe.

Although no alteration has been difcovered in the folids or fluids during any part of the difeafe, yet it may be poffible that fome contraction or motion of the

body may have taken place, for the removal of which the exertions that ariſe in fever may be neceſſary.

It becomes therefore matter of experiment to determine whether a fever may be ſtopped in its courſe without prejudice to the general ſyſtem.

If regard were had to the medicines only which were employed by the Greeks and Romans, and the earlier modern practitioners, it muſt be determined that it was ſeldom proper to try to ſtop the natural progreſs. But by the remedies of modern times, it is evident that tertians and other fevers may be put an end to with ſafety to the patient. We know however that there is not any remedy which will certainly carry off the diſeaſe, but that a regular tertian will ſometimes go through its natural courſe in ſpite of every attempt to terminate it.

It is alſo a queſtion to be determined, whether by ſtopping a tertian in its courſe

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ſome other diſeaſe may not be produced, which will either be more diſtreſſing in itſelf, or which may terminate in the death of the patient.

The Author is of opinion that a tertian ſhould not be checked in its progreſs, if it be at the hazard of the life of the patient; but where the riſk is of ſome other diſeaſe not fatal, it might be put a ſtop to in its courſe, for few others are more painful.

In conſidering the medicines to be employed when the tertain is not permitted to go through its natural courſe, the Author thinks it moſt eligible to treat of thoſe firſt which appear to be pointed out by what happens in the diſeaſe itſelf, and afterwards of thoſe which have been found out by accident to cure it.

Any medicine that would produce the ſame circumſtances which happen when a perfect criſis takes place naturally, by rendering the criſis complete, may occaſion the fever

fever to be entirely carried off and not to recur.

The firſt claſs of remedies tending to produce the ſame effects as occur in natural criſes are emetics, which all occaſion ſimilar appearances in a greater or leſs degree.

Ipecacuahn, or tartariſed antimony, produce theſe effects in the greateſt degree, therefore are taken as examples.

Theſe when firſt thrown into the ſtomach produce no ſenſible effect, as they are not the leaſt nauſeous to the taſte; but by degrees the patient becomes chilly, begins to look pale, and an uneaſineſs is felt about the ſtomach. The ſenſe of uneaſineſs is changed into a feel of ſickneſs; the exterior parts of the body become colder and paler, the latter evidently ſhowing that the ſmall veſſels are contracted: the ſkin being pale ſhows the dirty brown colour of the rete mucoſum and ſebaceous matter of the glands of the ſkin. The powers of the body

body and mind are depreſſed, the ſickneſs encreaſes, vomiting is produced, which has been imagined by ſome authors, not only to evacuate the contents of the ſtomach, but alſo by producing great agitation of the body to force obſtructing matters through the ſmall veſſels. But whoever has experienced the agitation produced by an emetic, and that on riding in a coach without ſprings on a rough pavement, muſt be ſenſible that the latter is infinitely the moſt violent, without producing any freedom from obſtruction.

If ſubſtances are contained in the ſtomach theſe are thrown up without much uneaſineſs, and the ſtomach becomes quiet. After a time a glow of heat takes place in the extremities and exterior parts of the body, the ſkin recovers its colour, ſoftneſs, and plumpneſs; ſweating comes on, the ſickneſs and uneaſy ſenſation about the ſtomach ceaſe, and the muſcular powers of the body recover their force to a certain degree. The patient remains quiet for ſome time, ſoon after however the ſame ſymptoms

toms recur and vomiting is re-produced, if any thing more be contained in the ſtomach it is thrown up, frequently bile along with it, and the other fluids ſecreted by the glands, whoſe excretory ducts open into the duodenum. After the ſecond fit of vomiting is over, the ſame enlargement of the ſmall veſſels and other ſubſequent appearances take place. The fits of vomiting, with all the concurring circumſtances, may return three or four times; when they ceaſe entirely the patient often falls into a profuſe ſweat, the ſecretions from the kidnies and inteſtines are encreaſed, there is a greater flow of ſaliva in the mouth, and all the appearances take place which ariſe in the criſes of fever.

An emetic therefore given during the paroxyſm of a tertian, acting along with the tertain itſelf, may produce a more perfect criſis, ſometimes ſuch an one as to be quite complete, and the fever may not return, this actually has happened in many caſes.

When the ſtomach is empty, and drink is not adminiſtered during the action of an

emetic, the vain attempt at evacuation after the contents of the ſtomach are evacuated, or the reaching always proves ſtimulating, and deranges the ſyſtem very conſiderably. It is often ſufficient to prevent the beneficial effects of the general diſpoſition to a perfect criſis; therefore fluids ought always to be drank, to give ſomething to be evacuated, independent of their waſhing the mouth and ſtomach clean.

Vomiting produced by ſome emetics is much more powerful than that produced by others in occaſioning the appearances that take place in the criſis of fever; drinking warm watery fluids gives a diſpoſition to vomit, which is followed by very few critical ſymptoms, and if the vomiting produced by other emetics be too long continued by means of warm water, the diſpoſition to critical ſymptoms will be taken off, therefore the chance of producing perfect criſis.

When it is neceſſary to employ a vomit at the beginning of fever to clear the ſtomach of its contents, thoſe ought to be preferred which have a tendency to produce

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ſymptoms of the criſis of fever. Ipecacuahn more certainly produces vomiting than tartariſed antimony; tartariſed antimony not uncommonly paſſing downwards and affecting the bowels, but it is rather more efficacious in producing appearances of criſis after the vomiting is over. The better practice is therefore to mix them together.

Neither of theſe remedies were known to the antients, nor indeed any preparation of antimony, for what they called ſtibium was undoubtedly an ore of lead; cold water, an emetic of the ſame kind, was employed by them, which was to be drank, as Celſus ſays, *ultra ſatietatem*, ſo as to produce vomiting, and afterwards ſweat. This remedy is not employed here, although it is ſtill uſed in Italy and Spain.

When a medicine is exhibited in too large a doſe it loſes its peculiar effects and becomes a ſimple ſtimulant. If emetics be exhibited in too large a quantity in fever, they loſe the effect of producing appearances of criſis after the vomiting is over. It is true,

true, that when the doſe is large, great part will be thrown up in the firſt fit of vomiting, but not till it has made an impreſſion on the ſtomach, which does not go off when the remedy is thrown out of it, therefore large doſes are leſs efficacious.

A grain of tartariſed antimony, with from five to ten grains of ipecacuahn, is quite a ſufficient doſe.

In order to produce the full effects of an emetic in procuring the ſymptoms of criſis, it ſhould be given to the patient in bed, that is when the diſpoſition to general increaſe of ſecretion and circulation in the exterior parts may be aided by the equal warmth of the bed.

Although ſymptoms of criſis are produced moſt ſtrongly by tartariſed antimony and ipecacuahn, yet all emetics have the effect in ſome degree. Even if the feathered end of a quill be put into the throat, ſo as to irritate it gently, an attempt will be produced in the muſcles of the abdomen,

domen, to contract and press upon the stomach, so as to throw up its contents, some degree of nausea will be brought on, but there will not be any contraction of the exterior parts, nor alteration of the colour of the skin, excepting in a very slight degree and very momentary; and although after the vomiting it over there will be some glow of heat in the exterior parts, and disposition to sweat, yet they will continue for a very short time, and secretions from the other secretory vessels will not take place.

An emetic may be employed during the paroxysm of fever, either in the beginning, middle, or towards the end. It may be exhibited immediately after the paroxysm is over, in the middle of the intermission, or in a little time before the paroxysm takes place. Different effects will arise from the various periods of its exhibition, but these will be better explained in taking notice of the other remedies to be employed.

Preparations of antimony, ipecacuahn, &c. administered so as not to produce vomiting, bring

bring on appearances ſimilar to thoſe of the criſis of fever.

Many have imagined this to be the effect of ſickneſs, although vomiting did not enſue. This can only be determined by experiment.

The Author has frequently exhibited tartariſed antimony to perſons in perfect health, in ſuch a manner that they were ignorant of having taken any medicine, neither did they feel the ſmalleſt degree of ſickneſs, yet in about an hour afterwards the ſkin became ſofter and moiſter than it would have done under ſimilar circumſtances, if tartariſed antimony had not been given, ſometimes the perſon has been thrown into a profuſe ſweat, the mouth became moiſter, there has been a greater ſecretion by the kidnies and from the inteſtinal canal, and greater eaſe has been felt over the whole body. It cannot be ſaid that theſe appearances took place from ſickneſs, when the perſons had not felt the leaſt diſ-

agreeable ſenſation in their ſtomach, or any other part of the ſyſtem.

Where theſe medicines have been adminiſtered to patients afflicted with fever, and a criſis by their means has been produced, which would not otherwiſe have happened, the patients have frequently been entirely free from any feel of ſickneſs and every kind of uneaſineſs about the ſtomach, yet the ſymptoms of criſis have begun in leſs than an hour after their exhibition.

When the ſtomach in fever will bear but a very ſmall doſe of theſe medicines without producing ſickneſs; as a fifth or ſixth part of a grain of tartariſed antimony, for inſtance, the Author has rarely found that any critical ſymptom has been produced; on the contrary, when the ſtomach was able to bear as large a doſe as half a grain of tartariſed antimony without producing nauſea, the ſymptoms of criſis have been produced in a ſhort time. From theſe obſervations it appears then, that it is not in con-

ſequence of the ſickneſs that theſe critical appearances are brought on, but that the medicine has another power of inducing ſuch appearances totally independant of nauſea.

It is entirely unknown how they produce this effect, it would appear however to proceed from ſome impreſſion they make on the ſtomach; for their action is too quick to allow of their being carried into the blood veſſels, commencing in many inſtances in half an hour or leſs, after the time of their exhibition. When any medicine gets into the ſtomach, and afterwards into the blood veſſels, ſo as to be applied to any ſet of glands and produce evacuation from them, it is always after a much longer interval than five or ſix hours. Mercury, which gets into the blood veſſels and ſtimulates the glands of the mouth, never produces greater ſecretion of ſaliva in leſs than twelve hours. Even purgatives, which perhaps paſs directly from the ſtomach into the inteſtines, hardly operate in leſs than two hours; therefore medicines that com-

mence their operations on the glands in the body in leſs than an hour muſt be conſidered as making the impreſſion on the ſtomach, and ſo producing their effect.

Another circumſtance pointing out that theſe medicines do not act by being abſorbed, carried into the blood veſſels, and applied to the glands is, that tartariſed antimony diſſolved in water, and applied to the ſkin itſelf, is ſo far from producing ſoftneſs of it and greater ſecretion from it, that it produces contraction and dryneſs of the ſkin, and has all the other effects of an aſtringent topically applied.

Many other arguments might alſo be brought to ſhow that theſe medicines have their effect upon the ſtomach.

Theſe medicines then by the impreſſion they make on the ſtomach produce a greater ſecretion from all the glands of the body and all the ſecretory veſſels, a ſoftneſs and pliability of all the parts, a univerſal ſenſation of eaſe and tranquillity; in ſhort all the ap-

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pearances that take place in the crifis of fever. They often render the crifis perfectly complete when exhibited in the paroxyfm of a regular tertian, and therefore not uncommonly terminate the difeafe in what would have been the firft paroxyfm of a tertian, if thefe medicines had not been exhibited, and fo in any fubfequent paroxyfm.

In order to produce thefe effects the medicine fhould be given in as large a dofe as the ftomach will bear without producing ficknefs. That is, two fevenths of a grain of tartarifed antimony, or a grain and a half of ipecacuahn, and other fuch remedies in the fame proportion, fhould be exhibited at the beginning of the paroxyfm and repeated in about three hours afterwards, the patient being kept in bed. If profufe fweating fhould take place, he fhould be kept in bed until it is entirely carried off.

Where a perfect crifis is not produced, continuing thefe medicines during the intermiffion produces beneficial effects, by taking off what remains of the paroxyfm

during the intermiſſion; and alſo by diminiſhing the force of the next paroxyſm they tend to leſſen the power of habit in producing ſubſequent ones. They ſhould be exhibited ſo as not to occaſion ſickneſs, and may be repeated every four, five, or ſix hours.

When exhibited every ſix hours during the whole periods, they alſo often carry off the diſeaſe, the paroxyſms after ſix or eight days not returning.

This practice is alſo advantageous, as by procuring more perfect intermiſſions food of greater nouriſhment may be allowed, medicines encreaſing the tone of the parts may be employed more freely, and more exerciſe may be uſed, ſo that theſe remedies may act with greater advantage.

Of the claſs of bitters, the powers of one are ſo pre-eminent, as perhaps to have brought the others into a conſpicuous point of view. The bark of a tree which grows in the kingdom of Peru, is a powerful remedy in preventing the returns of a fever

fever generally; it has been called cinchona, from the name of a lady who has been ſuppoſed to have been the firſt who exhibited it, and this name has been adopted by the London College of Phyſicians. The jealouſy of the Spaniſh government with regard to their American poſſeſſions and trade, has prevented the ſpecific characters of this plant from being perfectly known, much leſs to allow ſeeds or plants of it to be brought to Europe.

The bark of this, as of other trees, conſiſts of an internal part, having veſſels which appear like fibres, but which carry juices for the nouriſhment of the plant. The exterior part conſiſts principally of cells, containing the peculiar medicated juice, and is therefore the part to be employed in medicine, and is now indeed principally imported.

It has ſometimes been thought that the bark from the ſmall branches was more efficacious than that from the large. Sir

John Pringle obtained a quantity from the annual ſhoots, part of which the Author exhibited with very little effect. It would ſeem that more of the interior fibrous bark was formerly imported with the exterior cellular part when taken from the large than from the ſmall branches of the tree, for now no difference is found between bark from larger or ſmaller branches, provided they have been of two years growth.

Three kinds have been imported lately; one of a rich brown colour, one red, and one ſomewhat more yellow than the ordinary brown: ſome practitioners have preferred one, ſome another; the Author has exhibited them alternately with equal effect, excepting that a ſmaller doſe has been neceſſary, when they have been very perfect of their kinds.

All theſe, if perfect of their kinds, appear full of glittering particles, if broken and held in the ſunſhine, which appearance is loſt if the bark be decayed, and is deſtroyed when a decoction is made from

it, which has ſometimes been done without powdering it.

The cinchona has been exhibited reduced to a fine powder, infuſed in water, or boiled in water, and the inſoluble parts ſeparated and thrown away, digeſted in alcohol, or in mixtures of alcohol and water, the inſoluble parts being rejected. The water of the decoctions and infuſions has been evaporated, ſo as to leave the diſſolved part of the cinchona dry, which has been called an extract, and the alcohol and water of tinctures have been evaporated, which has been called a reſin, or the remainder after evaporating both tincture and decoction, which is called extract with the reſin.

It is certain that the powder is much more efficacious in preventing the returns of the paroxyſms of tertians than any other preparation of this bark, whether it be that there are ſome menſtrua in the ſtomach, which diſſolve it more perfectly than water, or alcohol, or that it acts on the ſtomach in a ſolid form. This bark ſhould be reduced

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to as fine a powder as poſſible, both becauſe the fine powder is more efficacious, and becauſe it may be exhibited without producing nauſea.

In ſome of the other diſeaſes where the cinchona may be employed with advantage, the infuſions, tinctures and extracts produce as much effect as the powder, but in all intermitting fevers the powder acts with very ſuperior efficacy.

The powder has been objected to on account of its diſagreeing with the ſtomach, and other forms have been recurred to as more agreeable to it, and to the taſte. The taſte of bark is leſs diſagreeable than that of many other medicines, and provided it be reduced to a powder ſufficiently fine, ſo as not to be felt gritty between the tongue and the palate, leſs objection is generally made to it in this ſtate than in any other form. The greateſt difficulty has ariſen from practitioners themſelves, who have ſuggeſted that it was unpleaſant, and that they could find ſome more agreeable form; but where the neceſſity is urged, even patients who

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are prejudiced againſt it make no objection to taking the powder.

By what operation, or in what manner the bark of cinchona prevents the return of intermitting fevers, is an intereſting ſubject of enquiry. To determine this queſtion the Author has exhibited it to a man in health, to the quantity of an ounce in twenty-four hours, which is ſufficient in many inſtances to prevent the return of a regular tertian, without any apparent difference taking place in the ſyſtem. The blood on trial has conſiſted of the ſame parts and poſſeſſed the ſame properties as it did before the cinchona was exhibited; the ſecretions that could be examined have remained the ſame, and in the ſame quantity, the perſon has perceived no difference in any part of the ſyſtem, has had the ſame appetite, the ſame ſenſations and powers of action. This medicine therefore produces no apparent effect in a man in health.

A much larger quantity of cinchona has been frequently employed in topical diseaſes, ſuch as gonorrhæa, where the general ſyſtem

fyftem has not been affected. The quantity even of two ounces in twenty-four hours, for a fortnight together, has been exhibited, without producing any difference in the chemical or mechanical properties of the matter of the body, or without producing any apparent effect, excepting relief in the topical difeafe. Therefore nothing tending to ellucidate the effect of the cinchona, in preventing the return of the paroxyfm of fever, is to be found in adminiftering it to perfons in health, or affected with topical difeafes.

Since the powers of cinchona have been difcovered, other fubftances have been employed for the fame purpofe, fuch as the medicines already enumerated, which have the fame kind of bitter tafte, and are employed for reftoring the tone; alfo preparations of iron, which have been fuppofed to have fimilar powers, likewife zinc, arfenic, &c.

Bitter medicines produce no effect when adminiftered to a man in perfect health, and where the tone is already fufficient, unlefs

unleſs they have a mixture of ſome other medicated matter, ſuch as chamomile, which contains a ſtimulating eſſential oil, and orange peel, which contains an aſtringent matter. Nor is any effect produced from the chamomile, if the eſſential oil be diſtilled away from it.

The return of the paroxyſms of fevers have been ſometimes prevented by theſe bitter medicines, although with much leſs certainty, or in other words, much leſs frequently than by the cinchona. The Author has actually prevented the return of the paroxyſm of a tertian, by exhibiting chamomile, wormwood and gentian, to the quantity of two ounces, during the intermiſſion, but they have much more frequently failed in their effect, that is, perhaps forty-nine times out of fifty, beſides that their eſſential oils have conſiderably diſordered the ſyſtem. Preparations of iron, &c. appear to be ſomewhat more efficacious.

Preparations of zinc have in ſome degree the ſame power, and if exhibited in a

quantity ſufficient to prevent the return of the paroxyſm, they have no effect in health, but their effects are not ſo well aſcertained as thoſe of bitters and of iron.

Preparations of arſenic and copper have alſo the power of preventing the return of the paroxyſm of fever, but given in the ſame doſe to a man in health produce great affection of the ſyſtem; viz. violent pains in the extremities, and ſometimes ſuch affection of the ſtomach as to be fatal.

The principal reaſon for noticing theſe medicines is to ſhow that the cinchona is not the only ſubſtance which has the effect of preventing the return of the paroxyſm, and that it has an action common to many other ſubſtances. What that action is cannot be determined, it is only known that it is more powerful in the cinchona than in any of the other ſubſtances acting in the ſame way. Copper, zinc, and iron are more efficacious than the bark, in preventing the return of the paroxyſm of epilepſy.

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The next thing to be confidered is, whether the cinchona has any power of taking off the paroxyfm of an intermittent, which has already begun.

When the cinchona was firft employed, it was exhibited juft before the coming on of the paroxyfm, and in fome cafes during the time of the firft ftage or cold fit. A kind of tradition has been handed down, that exhibited in this way, it had proved fatal in certain cafes; perhaps, if it be true, it was when exhibited during the time of the firft ftage. This has deterred the Author from ever employing it during that time, as he does not think a phyfician juftifiable in trying any experiment that has been conceived fatal, unlefs when it has been contradicted by other obfervations; but he has in many inftances employed it from the beginning of the hot fit, or fecond ftage of the paroxyfm of an intermittent. In this cafe fometimes no effect whatever has been produced during that paroxyfm, but it has gone on exactly as the paroxyfm which immediately preceded; in other inftances the paroxyfm

paroxyſm has continued longer, and the criſis and intermiſſion have been more imperfect, but he never met with a caſe in which the paroxyſm ſtopped, or became ſhorter, or where the criſis was more perfect than was to be expected if no medicine whatever had been exhibited. A concluſion to be drawn from thence is, that the bark of the cinchona, and probably all the medicines that act in a ſimilar manner, have no power of taking off a fever when preſent, but only a power of preventing the return; or if they have any action on a fever when preſent, they tend to prolong it, and prevent a perfect criſis from taking place.

There appears no doubt but that the effects of the cinchona are produced by the impreſſion it makes on the ſtomach.

About twenty years ago many very irregular and obſtinate intermittents were found in labourers who had come from the fenny parts of Lincolnſhire, and were admitted patients into St. Thomas's Hoſpital. Theſe intermittents

intermittents baffled the efforts of the physicians of the hospital, of whom the Author was one. The late Dr. Huck tried the various modes that had been recommended by authors for employing the cinchona. Among other modes of exhibiting it, half an ounce of the powder was sometimes given, in some cases an ounce, half an hour or an hour before the coming on of the paroxysm; in some instances the next paroxysm was prevented, in others it was not; the Author following his example, exhibited it in the same manner, and with the same effect. The success was so small as not to render it worth while to continue the practice, but it succeeded so often, however, as to ascertain certainly, that applied in this way it had the power to prevent the return of the paroxysm, if exhibited an hour before the first stage of the paroxysm would have taken place.

It is three or four hours after food is eaten before chyle can be formed from it, and be taken into the system. When the bark of the cinchona is exhibited in powder,

it is therefore not very probable that it ſhould be any way ſo diſſolved as to paſs into the ſyſtem, or be abſorbed by the lymphatics in ſo ſhort a time as an hour, and produce any effect on the fluids or any part of the ſyſtem. It is at leaſt very improbable that more than an eighth of the bark ſhould be extracted and carried into the other parts of the ſyſtem, but the eighth part of an ounce exhibited an hour before the coming on of the paroxyſm of fever; or two, three, four, or eight hours will hardly ever have the effect of preventing the return of the paroxyſm of an intermitting fever.

It happens not uncommonly that an hour after the exhibition of ſo large a doſe vomiting takes place, and a great part of the powder is thrown up, often as far as can be judged almoſt the whole, yet in ſome caſes the intermittent is prevented from returning; from which it may be concluded that its effects muſt have ariſen from its operation on the ſtomach. However, there may be fallacy in this caſe, as an emetic exhibited

exhibited juſt on the coming on of the paroxyſm has prevented its taking place.

Another reaſon for believing the effect of the cinchona to be owing to the impreſſion it makes on the ſtomach is, that no alteration can be diſcovered in the ſolids or fluids of the body, after it has been exhibited.

Suppoſing it therefore to be proved that the powers of the cinchona ariſe from the impreſſion it makes on the ſtomach; the queſtion is, how long that impreſſion remains.

When a medicine makes an impreſſion on a part on which it can act, and which is called in conſequence an irritable part, the impreſſion remains much longer than impreſſions on the organs of the ſenſes. When, for example, any ſtimulating ſubſtance, ſuch as cantharides, is applied to the ſkin, ſo as to produce heat an drednefs, but not a permanent inflammation, which appearances continue, independent of the ſtimulus applied, the heat and redneſs do not go off in leſs than half an hour, which is much longer than

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any impreſſion remains on any of the organs of the ſenſes, after the ſenſible object is removed.

The length of time the impreſſion remains in preventing the return of the paroxyſm of fever, when made on the ſtomach by the cinchona, has been proved to be conſiderable, by the experiments made by many phyſicians. The Author has tried it in ſeveral regular quartans where the intermiſſions laſted ſixty hours, and the intermiſſions were perfect; a drachm of the cinchona given every hour for ſixteen hours, at the beginning of the intermiſſion, and diſcontinued for the laſt forty-four hours, has prevented in ſeveral caſes the return of the fever. From this it is evident that the impreſſion made by the bark on the ſtomach laſts at leaſts forty-two hours.

A doſe of bark therefore exhibited at the beginning of the intermiſſion of a regular tertian will have ſuch an effect as to tend to prevent its return. This medicine conſequently ſhould be exhibited during the whole time of the intermiſſions, as the im-

preſſion made by every doſe will have an effect in preventing the return of the paroxyſm.

It might be imagined that a ſmall quantity of the bark of the cinchona might be exhibited at firſt, and in ſolution, ſo as to have the leaſt chance of producing ſickneſs and uneaſineſs of the ſtomach, and that if found not ſufficient to prevent the return, a larger quantity might be exhibited afterwards; or that if a ſolution could not produce the effect; it might afterwards be employed in powder. But the Author has been led to conclude from many obſervations, that if the cinchona be exhibited in ſuch a manner as not to prevent the return of the paroxyſms in the courſe of a few intermiſſions, that its effect is generally loſt, and that it never can be exhibited afterwards in any doſe, or in any manner ſo as to produce its effect in the manner it would have done if employed in a proper doſe and mode from the firſt. Frequently its power of preventing the return of the paroxyſm is totally loſt, and therefore it is of the utmoſt

importance to uſe it at the beginning in ſuch preparations and quantities as to be ef-fectual.

Where a firſt attack of fever goes through its three ſtages terminating in criſis, although not abſolutely perfect, the bark of the cinchona may be exhibited immediately after ſuch a paroxyſm, and will often prevent the return of the fever. It is true that in ſuch caſes it is by no means certain, the fever would have returned; but as it moſt frequently does in caſes where ſlight ſymptoms of the firſt ſtage remain, it is preferable to give the patient the ſlight inconvenience of taking a ſmall quantity of bark, than to hazard the riſk of the return and continuance of the diſeaſe.

If a firſt paroxyſm is gone through and very conſiderable intermiſſion has taken place, and no means have been uſed to prevent a return; ſhould another paroxyſm ſucceed, terminating in criſis, although not quite ſo perfect as the firſt, ſtill the cinchona may be employed without diſadvantage,

tage, to prevent the return of the third paroxyſm. It often happens, however, that the ſubſequent intermiſſions become leſs perfect, and the fever has acquired the force of habit; if the bark be exhibited during theſe imperfect intermiſſions, it will not with any certainty prevent the recurrence of the diſeaſe, ſo that where the firſt intermiſſion is paſſed over, an opportunity is frequently loſt of employing the cinchona with advantage for ſome time.

When an intermittent has begun with very little intermiſſion or remiſſion at the very firſt, and the intermiſſions have become gradually more perfect, and the cinchona has been exhibited before they have acquired a ſufficient degree of regularity, its preventing a return of the paroxyſm has been very uncertain, or if it ſhould have prevented the paroxyſm from returning for once or twice, the diſeaſe has often returned in five or ſix days, although the cinchona has been continued.

This is, however, a matter of great controversy among practitioners, some insisting that cinchona should be exhibited as soon as there is crisis, however imperfect.

In a temperate climate, such as that of this country, and in a person of tolerable strength, either when the intermissions are very imperfect from the first, or when the first or second have been more perfect, and the exhibition of the cinchona in them has been neglected, it is better to wait till they become perfect before the cinchona is exhibited, even if it should be as long as eight or ten days. The cinchona, it is true, will frequently prevent the next return of the paroxysm, exhibited in any part of the disease; but on the other hand its force is often entirely thrown away by this imprudent use of it, so that it will not prevent the returns at present, nor afterwards cure the disease.

When the irregularity of the intermissions render the use of the cinchona improper,

proper, they may be rendered much more perfect by keeping the primæ viæ in proper order, by means of emetics and laxatives, and by producing more perfect crises by preparations of antimony, &c. By these means intermissions are frequently rendered nearly perfect after two or three paroxysms, that would have remained as many weeks imperfect without them; besides, there is a chance in this case of removing the disease entirely by these remedies.

When a tertian has continued regular during two or three months and the cinchona never has been exhibited, and has become imperfect again; although the intermissions have been very irregular, the Author has found the cinchona efficacious in preventing their return.

With regard to the exhibition of the cinchona, it has already been said that it should be given in powder. Where there is perfect intermission at the beginning of the

the disease, the opportunity should be seized of employing it without any previous medicine being exhibited whatever, so as to prevent the disease from being fixed by habit.

If the intermissions should continue tolerably perfect after the second, it is always better to clear the primæ viæ by an emetic and laxative, such as rhubarb, before the cinchona is exhibited; the time of one paroxysm only is lost, and the remedy is rendered much more certainly efficacious.

Where the intermissions have been very imperfect from the first, or have become so afterwards, and then have grown naturally more perfect, the emetic and laxative should also precede the exhibition of the bark of the cinchona.

If the intermissions have been rendered more perfect by these means, the cinchona may be immediately employed without any previous remedy.

If the intermiſſions ſhould have become more imperfect again late in the diſeaſe, it is alſo proper to employ means of clearing the primæ viæ, before the cinchona is made uſe of.

When according to the above rules it is proper to employ the cinchona, a drachm of the bark of it reduced into very fine powder ſhould be exhibited and repeated every two hours at leaſt. Moſt ſtomachs will bear this doſe; if it will bear a larger two drachms at the end of every four hours would be preferable. This exhibition of the cinchona ſhould not be interrupted during the intermiſſion, therefore, if the patient falls aſleep, he ſhould be awakened at the proper time for taking it.

The cinchona ſhould be continued till within an hour of the time of the coming on of the next paroxyſm; that is an hour before the firſt ſenſible appearances of the diſeaſe take place. Should no appearance of the diſeaſe ariſe, it is to be omitted during the time

time that the next paroxyſm would have taken up. For if this remedy has had ſufficient efficacy during the time of one intermiſſion to prevent the return of the next paroxyſm, it will certainly, during the term of the following intermiſſion have power to prevent the ſubſequent paroxyſm. In a regular tertian this always is true; how far it holds in fevers of other types will be treated of in the diſſertation upon them.

By this means the ſtomach has time to clear itſelf totally of the former doſe before a freſh one is taken, and the ſenſe of weight and uneaſineſs ariſing from large and frequent doſes has time to go off.

If no traces of the paroxyſm have appeared, the ſtomach is left capable of digeſting the food exhibited during this interval, or if the patient's ſleep has been very much diſturbed, time is given for repoſe.

Although

Although a paroxyſm of an intermittent has been prevented by the cinchona, it frequently happens that, if no medicines be employed, ſome ſlight appearances of a paroxyſm will take place about the time the diſeaſe ſhould have recurred.

When ſlight ſymptoms of the attack of fever, ſuch as languor, pain in ſmall of the back, pain in the forehead take place at the time the paroxyſm ſhould have recurred, ſubſequent to that which was prevented by the cinchona, theſe ſymptoms encreaſe for the three or four times that would have been the times of the paroxyſms, and at length a compleat paroxyſm recurs, and the diſeaſe proceeds as if it had never been prevented.

Several means have been employed to prevent this re-production of the diſeaſe. The firſt and moſt efficacious, is to continue the uſe of the cinchona, by employing it in the ſame doſe as at firſt, at the time that would have been the time of the intermiſſion after the paroxyſm that was prevented by it, employing it as frequently as during the

time

time of the firſt intermiſſion. It ſhould be diſcontinued at the time when the ſubſequent paroxyſm ſhould have recurred; and the ſame practice ſhould be repeated during the time of the next intermiſſion. That is, if the tertian had commenced at twelve at noon on Sunday, and had compleated its ſtages by midnight, a drachm of the cinchona ſhould be exhibited at one on Monday morning, and continued every two hours till eleven on Tueſday morning; it is then to be omitted till one o'clock on Wedneſday morning, when it is to be given in like manner till eleven o'clock on Thurſday morning; it is then to be omitted till one o'clock on Friday morning; it is then to be exhibited till eleven on Saturday, and afterwards diſcontinued altogether for a time.

Many practitioners deny the neceſſity of this long uſe of ſuch a quantity of cinchona, having frequently cured their patients in a ſhorter time, and with much leſs doſes; but they have alſo very frequently failed. This failure is uſually attributed to the badneſs of the cinchona, to the

the particular conſtitution of the patient, relapſes produced by new cauſes, and a thouſand other things; but the author is convinced from his frequent trials of it in all ways, that in order to enſure ſucceſs it muſt be exhibited as above directed.

This even is not ſufficient to enſure ſucceſs perfectly, but an ounce ſhould be exhibited during the day time at the end of ſix days for two days; and again in the ſame manner after an interval of ſix days more.

The author cannot help again repeating the neceſſity of exhibiting the cinchona in this manner, having been ſo often diſappointed when it was otherwiſe uſed, and having ſo frequently found that this medicine having once been given ſo as to have failed in its effects, generally loſes the greateſt part of its efficacy in aftewards preventing the return of the diſeaſe.

If the bark ſhould affect the inteſtines as a purgative, it is a common and proper practice

practice to exhibit opium to prevent this effect. The opium ought to be employed ſo as to act on the inteſtines conſtantly and with efficacy, a third part of a grain, or its equivalent, in any of its preparations ſhould be given, and repeated at the end of every ſixth hour; it may be mixed with the doſe of bark which falls in with that period.

When on the other hand the periſtaltic motion of the inteſtines is prevented from going on, the natural evacuations ought to be produced by rhubarb, or ſome other gentle laxative, as purgatives ought by no means to be exhibited ſo as to make large evacuations.

Another means of preventing the returns of the paroxyſms, is by producing a profuſe ſweat at the time that the paroxyſm ſhould take place.

A variety of modes of producing this effect have been attempted. The moſt efficacious means is to exhibit a ſpice of

ſome

ſome kind, opium, and tartarized antimony, or any other efficacious preparation of it; wine or ſpirits with opium, alkali volatile, and ipecacuahn, the formulæ of which are in the author's Elements of the Practice of Phyſic.

Theſe medicines ſhould be given about an hour and an half before any ſenſible appearance of the paroxyſm is expected; the patient ſhould be in bed in cotton or flannel, and in this climate the room ſhould be heated in winter to 55°, in ſummer to 73° or 74°; warm watery fluids, ſuch as barley water, ſhould be exhibited to the quantity of two or three ounces every five or ten minutes, and in ſuch manner, as that the patient ſhould not be obliged to raiſe himſelf from under the bed-cloaths, from the ſpout of a tea-pot for example. The head ſhould be bound round with cotton or flannel, more bed-cloaths ſhould be uſed than the patient is commonly accuſtomed to. If by theſe means a profuſe ſweat can be produced at the time when the paroxyſm of the diſeaſe ſhould have come

on, none of the ſymptoms of the attack make their appearance, and in ſeveral inſtances the paroxyſm is entirely prevented.

Exhibiting ſome very ſtimulating purgative which affects the whole ſyſtem about ten hours before the uſe of theſe remedies, renders them more efficacious. Such as a mixture of ſcammony, colocinthida, aloes, and jalap, given ſo as to produce five or ſix evacuations; and ſo as that their purgative effects ſhall be entirely over by the time the ſudorific remedy is to be employed. The advantage of ſuch purgatives is from the diſpoſition they leave, after their purgative effects are over, to ſweating, even when no ſudorific remedy is made uſe of, and conſequent encreaſe of the power of the ſudorific. Purgatives were originally exhibited with a view of evacuating noxious matter, which effect however there is no reaſon to think is produced by them.

It is as little underſtood how the diſeaſe is prevented by theſe remedies, as by the uſe of the cinchona, or any other remedy acting in the ſame manner.

Whether